

243 Fire

BURNED AREA REHABILITATION PLAN



UNIT: SADDLE MOUNTAIN NATIONAL WILDLIFE REFUGE

LOCATION: Desert Aire, Grant County, Washington

DATE: July 21, 2008

PREPARED BY: Thomas Skinner and Heidi Newsome

Submitted By: _____ Date: _____

Gregory M Hughes

Mid-Columbia River National Wildlife Refuge Complex

EXECUTIVE SUMMARY

Introduction

This Burned Area Rehabilitation Plan has been prepared in accordance with Department of the Interior and US Fish and Wildlife Service (FWS) policy. This plan provides emergency stabilization recommendations for all lands burned within the 243 Fire perimeter and downstream impact areas including: public lands administered by the FWS and other jurisdictions if necessary. The primary objectives of the 243 Fire Burned Area Rehabilitation Plan are:

- To prescribe cost effective post-fire stabilization measures necessary to protect human life, property, and critical cultural and natural resources.
- To promptly stabilize and prevent further degradation to affected resources on lands within the fire perimeter or downstream impact areas and mitigate damages caused by fire suppression operations in accordance with approved land management plans and policies, and all relevant federal, state, and local laws and regulations.

This plan addresses emergency stabilization treatments. Thomas Skinner compiled the attached information with input and consultation from Refuge Biologist Heidi Newsome.

Individual resource Burned Area Assessment Reports are in Appendix I. The individual rehabilitation treatments specifications including effectiveness monitoring identified in the assessments can be found in Part F. A summary of the costs by jurisdictions is in Part E. Appendix II contains the National Environmental Policy Act (NEPA) compliance documentation summary.

Fire Background

- The 243 fire ignited at approximately 1430 on July 14, 2008. Cause of ignition is under investigation.
- Initial Attack on the fire was done by Grant Fire District 8. Because the fire appeared to be in, or had the potential to expand into, multiple jurisdictions and had exceeded the initial attack resources, the management of the fire was delegated to a Type 3 Incident Management Team, led by Woodall, from the Hanford Fire Department. Additional resources were mobilized and deployed onto the fire that continued to burn into the early evening. When activity diminished, the fire was returned to the management of the Mid-Columbia NWR Complex staff as a Type 4 incident. Mop up activities continued for two days.

Fire Damages and Threats to Human Safety and Natural and Cultural Resources

The western edge of the fire consists of dozer line. This line starts at the edge of State Route 243, a little more than two miles from the junction with State Route 24. The dozer line goes north from the road uphill onto the flats.

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PART A - FIRE LOCATION AND BACKGROUND INFORMATION

Fire Name	243
Fire Number	EB1H
Agency Unit	Saddle Mountain NWR
Region	1, Pacific Region
State	Washington
County(s)	Grant
Ignition Date/Cause	Under Investigation
Zone	
Date Fully Contained	July 20, 2008
Jurisdiction	Acres
Saddle Mountain NWR	1387
other jurisdictions	0
Total Acres	1387
Date Contained	

PART B - NATURE OF PLAN

Type of Action (check one box below)

XX	Initial Submission
	Amendment to the Initial Submission

PART C – BURNED AREA REHABILITATION ASSESSMENT

Burned Area rehabilitation Objectives

- Minimize wind-caused erosion of burned area adjacent to public motorways.

PART D - TEAM ORGANIZATION, MEMBERS, AND RESOURCE ADVISORS

I. Burned Area Rehabilitation Team Members:

Position	Team Member (Agency)
Team Leaders	Thomas Skinner (FWS) and Heidi Newsome (FWS)
Public Information	
Operations	
NEPA Compliance & Planning	
Hydrologist	
Soil Scientist	
Geologist	
Cultural Resources/Archeologist	
Vegetation Specialist	Kevin Goldie (FWS)
Wildlife Biologist	Heidi Newsome (FWS)
GIS Specialist	Lindsey Hayes (FWS)
Documentation/Computer Specialist	
Photographer	Kevin Goldie (FWS)

III. Resource Advisors: (Note: Resource Advisors are individuals who assisted the Burned Area Rehabilitation team with the preparation of the plan. See Part H for a full list of agencies and individuals who were consulted or otherwise contributed to the development of the plan.

Name	Affiliation
Gregory Hughes	Mid Columbia NWR Complex, Project Leader
Heidi Newsome	Mid Columbia NWR Biologist

PART E - SUMMARY OF ACTIVITIES AND COSTS

The summary of activities and cost table below identifies Burned Area Rehabilitation costs charged or proposed for funding from subactivity 9262 funding sources.

EMERGENCY STABILIZATION ACTIVITIES COST SUMMARY TABLE - 243 Fire

Spec #	Title	Unit	Unit Cost	# of Units	Work Agent	Cost
1	Non-native invasive species control- Integrated Pest Management Burned Area Rehabilitation	Acres		1387	SC or FA	\$57,508.00
2	Ecological Stabilization –Native Seeding/Invasive species control Burned Area Rehabilitation	Acres		1387	SC	\$404,749.00
3	Native Seed Collection Burned Area Rehabilitation	Job			SC or FA	\$11,439.00
4	Re-vegetation Invasive species control Burned Area Rehabilitation	Acres		1387	SC or FA	\$268,793.00
TOTAL COST						\$ 742,489.00
Work Agent: CA=Coop Agreement, FA=Force Account, G=Grantee, P=Permitee, SC=Service Contract, TSP=Timber Sales Purchaser, V=Volunteer						

PART F - INDIVIDUAL SPECIFICATIONS

TREATMENT/ACTIVITY NAME	Non-native invasive species control- Integrated Pest Management Burned Area Rehabilitation	PART E SPECIFICATION #	1
NFPORS TREATMENT CATEGORY*	Invasive Species	FISCAL YEAR(S) (list each year):	2009
NFPORS TREATMENT TYPE *	Chemical /Mechanical	WUI? Y / N	N
IMPACTED COMMUNITIES AT RISK	Sagebrush steppe	IMPACTED T&E SPECIES	Columbia Basin pygmy rabbit DPS (Endangered), Columbia Basin Greater Sage-grouse DPS(Candidate), Washington ground squirrel (Candidate)

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>A. General Description: Control noxious weed infestations remaining within 243 Fire area prior to seed-set and maturation. Control new infestations in fall of CY 2008 and during the spring and fall of CY 2009. Current weed species observed include Rush skeleton weed (<i>Chondrilla juncea</i>), Russian knapweed (<i>Acroptilon repens</i>), diffuse knapweed (<i>Centaurea diffusa</i>), puncturevine (<i>Tribulus terrestris</i>), and Russian thistle (<i>Salsola kali</i>). Utilize integrated pest management techniques (herbicides, biological, mechanical and cultural control methods) as appropriate to prevent the spread and establishment of noxious weeds within the fire area. Control Cheatgrass (<i>Bromus tectorum</i>) that germinates in fall of 2008 and spring of 2009 to reduce competition with native species recovery and reseeding efforts.</p> <p>B. Location/(Suitable) Sites: Control all visible noxious weed populations along roads, trails and disturbed sites within the fire area. Control sites identified include dozerlines, disklines, known infestations of Russian knapweed, Rush skeletonweed, Diffuse knapweed, Puncturevine, and Russian thistle. Control non-native invasive species, such as Cheatgrass, within the fire perimeter to decrease competition for native grass seeded species.</p> <p>C. Design/Construction Specifications:</p> <ol style="list-style-type: none"> Control known populations of noxious weeds as identified in USFWS reviews prior to seed set. Recommended herbicide for Russian knapweed and Bull thistle is Milestone (aminopyralid) @ 6 oz/acre. Recommended herbicides for Rush skeletonweed, Diffuse knapweed, Puncturevine, and Russian thistle, within upland shrub-steppe areas, are Transline (clopyralid) @ 1pt/gallon spot treatment and 2,4-D Amine @ 2 pt/acre in broadcast application. Recommended herbicide for cheatgrass control is Roundup PRO® (glyphosate), Journey® (imazapic/glyphosate) or Plateau® (imazapic). Application at low concentrations (3.5 oz.-1 pint/acre Round up PRO, 2-4 oz Plateau/acre, 6-11 oz Journey/acre) during late winter-early spring will minimize damage to native species. This treatment combination will evaluate which treatment works most effectively to reduce cheat grass. Adjuvants (e.g., surfactant, drift control agents, de-foaming agents) will be required for all weed treatments. Roadside and small infestations will be treated by backpack spraying or truck/ATV mounted sprayer. Non-native invasive species control within interior of fire area will be treated using fixed-wing or rotary aircraft services. Winds in the area to be sprayed should be less than 10 MPH (constant). A buffer of 150 feet will be adhered to around all private land areas. Herbicides approved for aquatic use will be used in riparian wetland areas according to labeled specifications. Applicator will be state certified. All aircraft used should be OAS certified; will be equipped with GPS guidance systems and contractor will be licensed and bonded. Locate, map, and document (using photography, topographic maps, and Global Positioning System--GPS—technology), new weed occurrences within burned area. Provide GPS shapefile to aerial contractors for use in GPS guided applications. Document percent control or kill of noxious weeds. <p>D. Purpose of Treatment Specifications: Protect the ecological integrity and site productivity of shrub-steppe plant communities and riparian areas within the Hanford Reach National Monument in accordance with established management plan guidelines.</p> <p>E. Treatment Effectiveness Monitoring Proposed: Spot checking of noxious weed sites to ensure control methods are meeting management objectives. A staff person from the Mid-Columbia River NWR Complex will visit sites controlled every week after initial treatment; this is especially important for weed populations that are sprayed to ensure effectiveness of herbicide application. If both spring and summer/fall applications are used then visits will occur during both these times. Also see Specification for Effectiveness monitoring of treatments.</p>
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LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
Maintenance Laborers (3) x \$30/hour x 40 hours per treatment x 3 treatment periods x 1 year (Backpack spraying work)	10,800.00
Wildlife Biologist (GS-12) x \$39/hour x 24 hours per treatment x 3 treatment monitoring periods x 1 year – treatment monitoring	2,808.00
	13,608.00
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST / ITEM
Roundup Pro – 15 Gallons (4 ounces/ac x 463 ac.) @ \$32/gallon	480
Plateau – 15 Gallons (4 ounces/acre x 463 acres) @ 277.00/gallon	4155
Journey –40 Gallons (11 ounces/acres x 463acres) @ 108.00/gallon	4320

Milestone – 6 Gallons (6 oz/acre x 100 acres) @ \$350/gallon	2100
Escort XP - 2 Gallons (2 oz/acre x 50 acres) @ \$80/gallon	60
2,4-D Amine- 25 Gallons (2 pt/ac x 100 acres) @ \$9.50/gallon	238
Transline - 2 Gallons (0.5% solution over 100 acres-spot treatments) @ \$295/gallon	590
Arsenal - 2 Gallons (1% solution over 20 acres-spot treatments) @ \$270/gallon	540
Garlon 4 - 2 Gallons (1.5% solution over 100 acres-spot treatment) @ \$80/gallon	160
MSO or MVO Surfactant – 10 gallons @ \$ 16.00/gallon	160
Misc. Spray nozzles, hoses, backpack sprayer, equipment repair	1000
TOTAL MATERIALS AND SUPPLY COST	\$13,803.00
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST / ITEM
4 X 4 Pickup @ .485/mile x 100 miles/day x 20 days x 1 fiscal year	
TOTAL TRAVEL COST	\$970.00
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST / ITEM
Aerial Application of Herbicide-1387ac. X \$21/ac.	\$29,127.00
TOTAL CONTRACT COST	

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
FY09	10/1/2008	9/30/2009	S and F	Acres	41.46	1387	57,508.00
FY__							
FY__							
FY__							
TOTAL							

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	
2.	Documented cost figures from similar project work obtained from local agency sources.	M,C
3.	Estimate supported by cost guides from independent sources or other federal agencies	
4.	Estimates based upon government wage rates and material cost.	P
5.	No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within the Accomplishment Report.
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TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
USFWS	1387 Acres	57,508
	TOTAL COST	

TREATMENT/ACTIVITY NAME	Native Seeding Burned Area Rehabilitation	PART E SPECIFICATION #	2
NFPORS TREATMENT CATEGORY*	Invasive Species	FISCAL YEAR(S) (list each year):	2009
NFPORS TREATMENT TYPE *	Prevention/Seeding	WUI? Y / N	N
IMPACTED COMMUNITIES AT RISK	Sagebrush steppe	IMPACTED T&E SPECIES	Columbia Basin pygmy rabbit DPS(Endangered), Columbia Basin Greater Sage-grouse DPS (Candidate), Washington ground squirrel (Candidate)

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

A. General Description: Apply native seed mix through aerial broadcast, and drill seeding applications in burned area to stabilize ecological integrity of native shrub steppe community, prevent invasion by noxious weeds and non-native species, and to limit erosion and stabilize soils.

B. Location/(Suitable) Sites: The 243 Fire area on Monument lands (1387 acres) is located on the Wahluke unit of the Hanford Reach National Monument (see Appendix 5 – Maps). Reseeding should take place across the portions of the fire area that were critical shrub-steppe habitat areas to stabilize soils, limit weed invasion, and promote ecological integrity

C. Design/Construction Specifications:

1. Purchase native seed mix: in appropriate amounts to stabilize soils and ecological function according to the following specifications for native seed mix.
Mix 1 : Sandy soils areas: 1387 acres aerial application.

Grasses

Indian Ricegrass (<i>Oryzopsis hymenoides</i>) (Nez Par)	3 lbs./ac. PLS
Needle and thread grass (<i>Stipa comata</i>)	0.2 lbs/acre
Sandberg's bluegrass (<i>Poa sandbergii</i>) (Hanford)	2 lbs./ac. PLS
Sand dropseed (<i>Sporobolous cryptandrus</i>)	0.2 lb. /ac PLS
Bottlebrush Squirreltail (<i>Elymus elymoides</i>)	1.5 lbs./ac PLS
Thickspike Wheatgrass (Swindemar) (<i>Elymus lanceolatus</i>)	4 lbs./ac PLS

Forbs

Yarrow, (<i>Achillea millefolium</i>)	0.2 lbs./ac PLS
Columbia Blue Flax (<i>Linum</i> sp.)	0.2 lbs./ac PLS

Shrubs

Wyoming Big Sagebrush (<i>Artemisia tridentate</i> ssp. <i>wyomingensis</i>)	0.1 lbs/ac PLS
Winterfat (<i>Krascheninnikovia lanata</i>)	0.1 lbs/ac PLS
Antelope bitterbrush (<i>Purshia tridentata</i>)	0.2 lbs/ac PLS.

2. Seed Mixture Selection and Certification: The seed mix should be tested for purity and germination rates. Before accepting delivery of seed shipment the contractor must provide written evidence (seed label and letter) to the Monument managers (Deputy Project Leader or Supervisory Wildlife Biologist) that the seed conforms to the purity and germination requirements in the specification. Seed must also be source identified as to its origin. Columbia Basin derived and grown seed is required, where practical, for all native grass, forb and sagebrush species.

3. Delivery: Deliver certified weed-free seed sold on pure live seed basis. Deliver to Hanford Reach National Monument.

Storage: Seed should be applied as soon as possible after delivery. If immediate application is not possible the seed should be stored under dry, cool conditions and protected from rodents and other wildlife. Seed also needs to be protected from dew and rain.

4. Timing of Seeding Application: Seeding should occur in December, 2009, or no later than late January, 2010.

Application Rate: Seed will be applied at the above rates, on a PLS/acre basis.

5. Application Method: Seed will be applied by aerial contract services for broadcast seed operations. Broadcast seeding will be conducted by fixed-wing aircraft. Aircraft should be OAS certified; will contain GPS guided navigational systems for accurate seed placement to coordinates provided by the USFWS; contractor must be bonded.

D. Purpose of Treatment Specifications: To promote ecological recovery of native shrub/steppe ecosystem, to prevent invasion by non-native species and noxious weeds, and to stabilize soils.

E. Treatment Effectiveness Monitoring Proposed: Monitor to determine effectiveness. Seedling emergence and seedling establishment.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
Wildlife Biologist (GS-12) @ \$39/hr X 120 Hours X 1 Fiscal year (contract management)	4,680.00
TOTAL PERSONNEL SERVICE COST	4,680.00
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST / ITEM
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	.00

MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST / ITEM
Native Seed Mix 1 @ \$251 ac x 1387 aerial seed acres	348,137.00
TOTAL MATERIALS AND SUPPLY COST	348,137.00
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST / ITEM
TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST / ITEM
Aerial Broadcast Seeding –Fixed Wing Aircraft \$36/ac x ~ 1387 acres plus mobilization cost \$2,000	51,932.00
TOTAL CONTRACT COST	51,932.00

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
FY09__	10/1/2008	9/30/2009	S	acres	291.80	1387	404,749.00
FY__							
FY__							
FY__							
TOTAL							

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	C
2.	Documented cost figures from similar project work obtained from local agency sources.	P,C,M
3.	Estimate supported by cost guides from independent sources or other federal agencies	P
4.	Estimates based upon government wage rates and material cost.	
5.	No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

Please refer to Vegetation and Wildlife Assessments- Appendix I

TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
U.S. Fish and Wildlife Service, Mid-Columbia River Refuge Complex, Hanford Reach National Monument	1387 acres	404,749.00
	TOTAL COST	404,749.00

TREATMENT/ACTIVITY NAME	Native Seed Collection Burned Area Rehabilitation	PART E SPECIFICATION #	3
NFPORS TREATMENT CATEGORY*	Invasive Species	FISCAL YEAR(S) (list each year):	2009
NFPORS TREATMENT TYPE *	Native Seed Collection	WUI? Y / N	N
IMPACTED COMMUNITIES AT RISK	Sagebrush Steppe	IMPACTED T&E SPECIES	Columbia Basin pygmy rabbit DPS (Endangered), Columbia Basin Greater Sage-grouse DPS(Candidate), Washington ground squirrel (Candidate)

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>A. General Description: Collect native seed from shrub-steppe plant communities surrounding the 243 fire area for the establishment of rehabilitation plant materials for rehabilitation treatments related to ecological stabilization of the site, and for rehabilitation of any suppression impacts (backfire areas and dozer/diskline).</p> <p>B. Location/(Suitable) Sites: Collect seed from native Wyoming big sagebrush (<i>Artemisia tridentata</i>), bitterbrush (<i>Purshia tridentata</i>), spiny hopsage (<i>Grayia spinosa</i>), purple sage (<i>Salvia dorrii</i>) and buckwheats (<i>Eriogonum sp.</i>) and bunchgrass (<i>Poa sp.</i>, <i>Stipa sp.</i>, <i>Oryzopsis sp.</i>, <i>Agropyron sp.</i>) populations for the establishment of nursery stock for rehabilitation efforts within the 243 fire area. Collection sites will be within HRNM, SMNWR, or adjacent lands with permission.</p> <p>C. Design/Construction Specifications:</p> <ol style="list-style-type: none"> 1. Identify collection sites within the project area for native seed collection. 2. Develop collection protocols to ensure genetic quality and the protection of collection sites from over-harvest. 3. Collect adequate seed in CY08 & 09 to contract for seedling production and seed multiplication in 09 & 10. 4. Process and clean collected seed to obtain useable material for nursery growing operations (seedling production) and field trials. <p>D. Purpose of Treatment Specifications: To ensure compatibility for adaptation of plants to site specific conditions. The Hanford Site area is known to be one of the most harsh (i.e. hottest and driest parts of Washington state), plants do not survive well in this area unless derived from local stock, or adapted to conditions in the Columbia Basin. Seed collection will protect the ecological integrity and site productivity of shrub-steppe plant communities within the 243 fire area, by providing plants that are adapted to site specific conditions.</p> <p>E. Treatment Effectiveness Monitoring Proposed: Seeds would be categorized by collection (seed lot) and germination trials conducted. Seedlings/seeds produced from seed would be outplanted in fire area and monitored for survival.</p>

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
Natural Resource Specialist GS- 11 @ \$21.68/hr. X 200 hours X 2 years	8,672.00
TOTAL PERSONNEL SERVICE COST	8,672.00
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST / ITEM
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST / ITEM
TOTAL MATERIALS AND SUPPLY COST	
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST / ITEM
Vehicle- 100 miles per day , 4 days per week, for 6 weeks @ .485 per mi.	1164.00
TOTAL TRAVEL COST	1164.00
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST / ITEM
Seed Cleaning Costs (to produce up to 25 pounds of clean seed of grasses) @ \$61.25 per lot X10 species	613.
Germination tests per seed lot @ \$ 45 per lot X 10 species	450.00
TZ testing per seed lot @ \$ 54 per lot X 10 species	540.00
TOTAL CONTRACT COST	1,603.00

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
FY09_	10/1/08	9/30/2009	F	species	1116.25	10	11,439.00
FY__							
FY__							
FY__							

TOTAL

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	
2.	Documented cost figures from similar project work obtained from local agency sources.	
3.	Estimate supported by cost guides from independent sources or other federal agencies	
4.	Estimates based upon government wage rates and material cost.	
5.	No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within the Accomplishment Report.
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TOTAL COST BY JURSDICTION

JURISDICTION	UNITS TREATED	COST
USFWS	Task	\$11,439.00
	TOTAL COST	

TREATMENT/ACTIVITY NAME	Re-vegetation Invasive species control Burned Area Rehabilitation	PART E SPECIFICATION #	4
NFPORS TREATMENT CATEGORY*	Wildlife Habitat and Invasive Species	FISCAL YEAR(S) (list each year):	2009
NFPORS TREATMENT TYPE *	Terrestrial Habitat Structure and Competition Planting	WUI? Y / N	N
IMPACTED COMMUNITIES AT RISK	Sagebrush Steppe and Riparian	IMPACTED T&E SPECIES	Columbia Basin pygmy rabbit DPS (Endangered), Columbia Basin Greater Sage-grouse DPS(Candidate), Washington ground squirrel (Candidate)

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>A. General Description: The treatment will consist of planting native shrub/tree seedlings including Wyoming big sagebrush (<i>Artemisia tridentata</i>), Spiny hopsage (<i>Grayia spinosa</i>), Antelope bitterbrush (<i>Purshia tridentata</i>), winterfat (<i>Eurotia lanata</i>), and/or purple sage (<i>Salvia dorrii</i>), to rehabilitate impacted shrub-steppe communities that serve as critical habitat for listed and sensitive species.</p> <p>B. Location/(Suitable) Sites: Seedlings will be planted in areas that supported native shrub plant community sites prior to the fire. Planting sites will be chosen based upon habitat recovery needs, soil productivity, moisture regimes, lack of invasive species, and other native plant species post-fire recovery. Seedling shrubs will be installed in areas near to the limited existing shrub cover that survived the fire. This will expand the effective shrub cover within the fire area, and will allow areas being seeded to native grasses to receive herbicide treatment without impacting planted shrubs. Shrubs/trees will be installed by contracted professional re-forestation planting crews. All sites will be cleared for planting by cultural resources staff prior to installing seedlings.</p> <p>C. Design/Construction Specifications:</p> <ol style="list-style-type: none"> 1. Select planting locations and GPS boundaries of planting locations. 2. Provide maps to cultural resources personnel for review and clearance under section 106 NHPA. 3. Install seedling plants using contract re-forestation planters, December 2008/January 2009. Supervise planting and provide maintenance and logistics support. <p>D. Purpose of Treatment Specifications: Protect and stabilize the ecological integrity and site productivity of native shrub-steppe plant communities and riparian areas, by preventing the invasion of non-native invasive species, and by establishing a trajectory for site recovery, within the Wahluke unit, Hanford Reach National Monument in accordance with established refuge purposes and establishment guidelines.</p> <p>E. Treatment Effectiveness Monitoring Proposed: During the summer of 2009, conduct survival survey to determine success of out-plantings. Determination of survival rate should be documented with findings and incorporated into an annual report.</p>

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
Wildlife Biologist or Natural Resource Specialist GS -12 (39/hr) X 120 Hours	4,680.00
Maintenance workers (2) to assist contract planting crews (plant handling, transport, temporary fence placement) GS-7 @ 15.21/hr x 80 hr x 1 FY	2,434.00
TOTAL PERSONNEL COST	7114.00
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST / ITEM
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST / ITEM
Native shrub seedlings – 4" tubling container stock @ .75 X 225,000	168,750.00
	168,750.00
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST / ITEM
4 X 4 Pickup @ 0.485/mile x 100 miles/day x 14 days x 1 fiscal year	679.00
TOTAL TRAVEL COST	679.00
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST / ITEM
Re-forestation planting crew @ 0.41 per plant (upland areas) X 225,000 plants X 1 fiscal year (FY09)	92,250.00
	92,250.00

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
FY09_	12/01/2008	3/1/2010	S	acres	195.35	1387	268,793.00
FY__							
FY__							
FY__							
TOTAL							

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	
2.	Documented cost figures from similar project work obtained from local agency sources.	
3.	Estimate supported by cost guides from independent sources or other federal agencies	
4.	Estimates based upon government wage rates and material cost.	
5.	No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

See Vegetation Resource Damage assessment. Maps of shrub cover, sensitive vegetation, avian habitat, and riparian zones. Construction, plant and material costs derived from current cost estimates for materials. Contractual labor costs based upon actual costs for associated work (24 Command Fire Final Accomplishment Report- 2004).

TOTAL COST BY JURSDICTION

JURISDICTION	UNITS TREATED	COST
USFWS	1387 Acres	\$268,793.00
	TOTAL COST	

PART G - POST-EMERGENCY STABILIZATION REQUIREMENT

The following are post-emergency stabilization, implementation, operation, maintenance, monitoring, and evaluation actions after three years from the control of the fire to ensure the effectiveness of initial investments. Estimated annual cost and funding source is indicated.

1. Monitor and maintain road culverts clear of debris (\$5,000 - 1261)
2. Continue invasive species monitoring and control (\$50,000 - 1261)
3. Maintain fire breaks (disking, mowing, spraying) (\$7,500 – 9131)
4. Maintain fences and signs (\$4,000 – 1262)
5. Revisit photo-monitoring points (GS-09 Wildlife Biologist, 60 hours, \$1,230 – 1261)
6. Monitor native plantings (GS-09 Wildlife Biologist, 80 hours, \$1,640 – 1261)
7. Wildlife resource monitoring/sensitive species surveys (GS-11 Wildlife Biologist, 320 hours, \$8,160 – 1261)
8. Maintain and relocate erosion fencing as needed (\$8,000 – 1262)

APPENDIX I - BURNED AREA ASSESSMENT REPORTS

243 FIRE

CULTURAL RESOURCE ASSESSMENT

I. OBJECTIVES

Assess damages to known historic and prehistoric cultural resources as the result of fire behavior.

Assess potential risks to known/documented cultural resources as the result of the fire (e.g. erosion, flooding, and exposure to looting and/or vandalism).

Assess potential risks to known cultural resources as the result of emergency stabilization activities.

II. ISSUES

- Identify known/documented resources that have been subject to direct or indirect effects of fire.
- Identify emergency stabilization and/or protection needs for cultural resources within the fire.
- Other resources stabilization measures that may put cultural resources at risk.
- Consultation with appropriate parties to meet legal compliance and tribal consultation.

III. OBSERVATIONS

A. Background

The 243 Fire started on July 14, 2008, near the Vernita Bridge in the Saddle Mountain Unit of the Saddle Mountain National Wildlife Refuge, Hanford Reach National Monument. Prior to containment, the 243 Fire burned 1386.6 acres of grass and sagebrush in an area bounded on the north by the "29 SW" road, on the east by the "L" SW Road, on the south by Washington State Highway 243, and on the west by a constructed dozer-disk line. This area is located approximately 6 miles east of Desert Aire, Grant County, Washington, just north of where Highway 24 crosses the Columbia River over the Vernita Bridge.

The Monument has a large number of historic and prehistoric sites recorded within its boundaries. Most of the historic properties are related to the Hanford site's nuclear development, including the Manhattan Project, the Cold War development, and cleanup activities associated with decommissioning the facilities. In addition, there are pre-Hanford homesteads that were displaced in 1943 for the Hanford Site. The prehistoric component is primarily known from earlier work done by a number of archaeologists at large village sites along the Columbia River, as well as other sites located during National Historic Preservation Act, Section 106 compliance surveys.

The prehistoric cultural chronology of the Hanford Site area is taken from the National Register of Historic Places Multiple Property Documentation Form – Historic, Archaeological and Traditional Cultural Properties of the Hanford Site,

Washington (U.S. Department of Energy 1997). As their summary indicates (1997:2-1) states:

The prehistoric Columbia Plateau region has been impacted by basalt flows, catastrophic flooding, and environmental change which has meant that prehistoric regional inhabitants adapted their cultural subsistence systems as necessary to survive. The moist, cool conditions of the early Holocene meant that early peoples [12-15,000 B.P. to 8,000 B.P.] were probably mobile, taking advantage of available resources in an organized fashion.

As the environment became drier after 8,000 years B.P., it is likely that the descendants of these early people developed a more mobile, generalized riverine-based economy. The arrival of a moist and cool environment at approximately 4,500 years B.P. was coupled with year-round residency and a hunter-gatherer subsistence pattern which was modified briefly at 3,800 years B.P.

Approximately four-hundred years later, circa 3,400 years B.P., the climate cooled once again but the sedentary lifestyle did not return to the study area until 3,000 years B.P. After this point, populations increased along the rivers as groups focused on salmon, roots and ungulates. A significant increase in storage and food processing activities were common to many people throughout the Columbia Basin although the mobility of the hunter-gatherer lifestyle remained a strong component into the ethnographic period.

The area of the 243 Fire may have been seasonally used for gathering grass seed, roots, hunting and acquisition of silicates and basalt from the glacial gravel deposits. It appears, however, that this area is far enough above the Columbia River and lacks evidence of springs or dry channels that would indicate a nearby water supply. Thus, it is believed that this area did not afford requisite resources for more permanent settlement.

The ethnographic/Contact Period (1805-1943) extends from the first contact until the Native Americans were excluded from settlement or use of the area. This period reflects both a continuity of earlier lifeways and changes towards Euro-American building styles and incorporation of Euro-American materials. During this period the Indians ceded lands and were, for the most part, moved onto reservations. At the present time the Federally recognized Confederated Tribes of the Umatilla Indian Reservation, Yakama Indian Nation, Confederated Tribes of the Colville Indian Reservation, Nez Perce Tribe, and the non-Federally recognized Wanapum have expressed interest in this area (U.S. Department of Energy 1997:3.4-3.35).

Euro-American Resettlement on the Hanford Site (1805-1943): The passage of Lewis and Clark (1805-06) through this area begins the historic period. Subsequent to this were the passage of missionaries, mining, ranching, establishment of trading posts, river travel, and community development (U.S. Department of Energy 1997:4.6-4.21). With the possibility of grazing and possibly limited homestead use, the area included in the 243 Fire appears to

have been bypassed by historic development in more favorable areas with access to water.

Hanford Development (1943-1990). The history associated with the Hanford Site and its nuclear development is included in David Harvey (n.d. History of the Hanford Site 1943-1990) and U.S. Department of Energy (2002, History of the Plutonium Production Facilities at the Hanford Site Historic District, 1943-1990. Manhattan Project 1943-1946, Cold War Era 1947-1990).

Since the 243 Fire occurred on lands that were acquired as a buffer for the Hanford Site, no development occurred there from 1943-1950. Beginning in 1950, Cold War tensions resulted in a military presence at Hanford. In 1950 the first of sixteen anti-aircraft artillery batteries were established to encircle and protect the nuclear reactors at Hanford. The typical layout of a battery covered about 20 acres and had up to 20 buildings and structures associated with them. Beginning in 1954 the Army began supplementing the anti-aircraft artillery guns with Nike surface to air missiles and by late 1957-early 1958 had phased out the artillery sites in the fire area (Harvey 2002:2-93-2-96). At some time after their deactivation these sites were razed.

B. Reconnaissance Methodology and Results
No field reconnaissance occurred

C. Findings
No findings developed

Prehistoric Sites

The 243 Fire was located on the north side of the Columbia River. It burned uphill, away from the lower terrace and any prehistoric sites that might be located along that landform.

Historic Sites

Since the 243 Fire was located on the north side of the Columbia River, it did not involve sites related to the Hanford Historic District.

Additional Risks

The primary threat to this area could be trespassing associated with the collection of pebble and cobble-sized chert, jasper and other silicate gravels on the south facing slopes immediately north of Highway 24. This is the same material that prehistoric peoples gathered, and remnants of their activity (primary flakes and lithic reduction sites) may be present. Further, this area is in full view of Highway 243 which would help deter casual collection.

IV. RECOMMENDATIONS

A. Emergency Stabilization – Fire Suppression Repair

Fire suppression activities did not impact prehistoric or historic sites.

B. Emergency Stabilization

No Emergency Stabilization specifications specific to cultural resources are advanced at this time. If ground disturbing activities are proposed for other resources under emergency stabilization, Section 106 clearance, including appropriate tribal consultation, should be included in that specification.

C. Rehabilitation

No rehabilitation specifications specific to cultural resources are advanced at this time. If ground disturbing activities are proposed, Section 106 clearance, including appropriate tribal consultation, should be included in that specification.

D. Management Recommendations – Non-Specification Related

Wildland fire has the potential to adversely affect cultural resources, however it also offers the opportunity to perform inventories in areas that were previously inaccessible and in areas where fire has effectively removed ground cover that was obscuring sites. In this case, however, an opportunity exists to inventory the unburned area between the fire and hill slope above Highway 243. Funding for this suggested activity should come from the unit's operating program or other funding sources. Given these conditions, the following non-specification recommendations are offered:

A systematic and comprehensive cultural resources inventory and site documentation in areas of high site probability should be carried out on hillslope and include the transition from where the steep hill slope levels onto the flat, especially in the areas where silicate gravels are found.

IV. CONSULTATIONS

None

VI. REFERENCES

David Harvey
History of the Hanford Site 1943-1990. Pacific Northwest National Laboratory. n.d.

D.W. Harvey
Military Operations. In History of the Plutonium Production Facilities at the Hanford Site Historic District, 1943-1990. Manhattan Project 1943-1946, Cold War Era 1947-1990, Chapter 9. Hanford Cultural and Historic Resources Program. 2002.

United States Department of Energy
National Register of Historic Places Multiple Property Documentation Form – Historic, Archaeological and Traditional Cultural Properties of the Hanford Site, Washington. February 1997.

United States Department of Energy

History of the Plutonium Production Facilities at the Hanford Site Historic District, 1943-1990. Manhattan Project 1943-1946, Cold War Era 1947-1990. Hanford Cultural and Historic Resources Program. 2002.

BURNED AREA REHABILITATION PLAN

243 Fire

WILDLIFE RESOURCE ASSESSMENT

I. OBJECTIVES

- Assess effects of fire and suppression actions to Threatened, Endangered, Proposed and other significant agency listed species and their habitat, including birds, mammals, amphibians, reptiles, fish and insects.
 - Initiate Emergency Section 7 Consultation as required by the Endangered Species Act.
 - Assess effects of fire and suppression action to habitat improvements.
 - Assess effects of proposed emergency stabilization actions to listed species and habitat.
- I.

II. ISSUES

- 11 agency listed wildlife species occur within the fire area, most of which are dependent on the shrub-steppe plant community.
- Potential effects to these species from the fire, suppression actions and potential post fire effects to shrub steppe obligate species.
- Potential effects to these species from proposed emergency stabilization actions.

III. OBSERVATIONS

A. Background

The purpose of this Burn Area Emergency Stabilization (BAER) Wildlife Assessment is to document the effects of the fire, suppression actions, proposed emergency stabilization work, and potential post fire erosion, to all federally listed, agency sensitive and culturally significant mammals, birds, amphibians, reptiles, fish, invertebrates, and their habitats which may occur within or downstream from the fire area. This assessment also includes documentation on Emergency Section 7 Consultation, as required by the Endangered Species Act, with U. S. Fish and Wildlife Service. The species list is included in Appendix V of this report. This species list was developed by Heidi Newsome, Wildlife Biologist, U. S. Fish and Wildlife Service (FWS), Hanford Reach National Monument/Saddle Mountain NWR. Species occurrence discussed in this assessment is based on formal surveys and habitat inventories conducted prior to the 243 Fire, and post fire reconnaissance. Documents, inventory data, sighting records, vegetation maps and other species specific information referenced in this report are on file at the Monument office.

The Hanford Site is located in the Pacific Flyway. Habitats within the fire area serve as resting areas for neotropical migratory birds. The Hanford site includes habitat for many wildlife species, including 40 mammals, 246 birds, 4 amphibians, 9 reptiles, 49 butterfly taxa, 318 species of moths, and 52 taxa of aquatic macro invertebrates. Species diversity on the Hanford Site can be attributed to the size, diversity and relatively undisturbed condition of the native shrub-steppe habitat.

B. Reconnaissance Methodology

Information used in this assessment is based on a review of relevant literature, agency management planning documents, agency wildlife sighting and habitat inventory data, communication with FWS, personal communication with agency biologists (listed at end of report), and reconnaissance of the fire area. Habitat information and mapping for the various species is based on agency records and post fire reconnaissance. Reconnaissance and analysis included review of other fires in the area to assess effects to species and vegetative recovery.

C. Findings

To better understand the species and habitat information discussed in this wildlife assessment, it is important to review the 243 Fire BAER Vegetation and Soils Resource Assessments. These reports contain more detailed descriptions of pre-fire vegetation, post-fire vegetative recovery estimates, and effects to the watersheds.

The purpose of this assessment is to discuss the potential effects of the fire, suppression actions and proposed emergency stabilization activities to federally listed and sensitive species which occur within the fire area. Effects to general wildlife species are not discussed. This assessment is not intended to definitively answer the many questions of effects to specific species that are inevitably raised during an incident such as the 243 Fire. The focus of this assessment is to determine the potential for immediate, emergency actions that may be necessary to prevent further effects to these species. Because the species discussed in this assessment have ranges or territories which extend beyond the fire area, it may be important to include information at a larger scale, across land ownership boundaries, for species which may require assessment for long term rehabilitation or restoration needs.

BIOLOGICAL EVALUATION

Direct effects as described in this report refer to mortality or disturbance that result in flushing, displacement, harassment or mortality of the animal. Indirect effects refer to modification of habitat and/or effects to prey species.

SHRUB-STEPPE DEPENDENT WILDLIFE SPECIES

The community of plants and animals found in this area represents one of the largest remaining examples of the shrub-steppe ecosystem that once covered the Columbia River Basin. Termed a biological treasure, the monument contains rare, rich and diverse shrub steppe ecosystem flora and fauna that has been lost elsewhere due to habitat conversion, fragmentation and application of pesticides. The shrub-steppe ecosystem supports an unusually high diversity of native plant and animal species, including significant breeding populations of nearly all steppe and shrub-steppe dependent wildlife. This area serves a critical role in contributing to the local, regional, national and international ecological integrity of the shrub-steppe ecosystem. The area provides critical corridor links for shrub-steppe obligate species traveling between the Saddle Mountain National Wildlife Refuge Unit and the Yakima Training Center (YTC) habitat. These corridors represent some of the last remaining intact shrub-steppe communities in the Columbia Basin Ecoregion. Stabilization efforts are needed to maintain these corridors to facilitate movement of terrestrial wildlife. It is critical to the survival of the shrub steppe ecosystem to minimize fragmentation and loss of connectivity between these habitats.

While fire has played an integral role in the history of the shrub-steppe environment, the region's historical fire regime has been greatly altered from socio-political and economic factors. Coupled with the arrival of invasive species and noxious weeds, this has weakened the natural recovery processes of the shrub steppe ecosystem from disturbance events such as fire. Several areas considered sensitive shrub-steppe plant communities were located within the fire perimeter. These vegetation communities provide rare and unique habitat that is critical for meeting FWS regional, national and ecosystem goals and objectives. Managing for biological integrity in this area necessitates that actions be taken to mitigate the ecological effects increasing fire frequency and intensity, and invasion of exotic species.

The 243 Fire resulted in significant negative effects to plant communities through removal of approximately 85 percent of the sagebrush, antelope bitterbrush and associated plant cover. Sagebrush is either a food source or provides nesting, resting, thermal and escape cover for a wide variety of species. Other value for wildlife includes the thick canopy which protects understory vegetation that can be a valuable food source for wildlife. Wildlife species in the fire area that are dependent on the sagebrush shrub-steppe and have federal or state listing status include: Ferruginous hawk, burrowing owl, loggerhead shrike, sage sparrow, Washington ground squirrel, pygmy rabbit, black tailed jack-rabbit, sagebrush lizard and striped whipsnake.

Wildlife Species of Concern: 243 Fire Species List

On August 4, 2008 current species lists for the 243 Fire area were obtained from U. S. Fish and Wildlife. On June 9, 2000, President Clinton directed the FWS to manage the Hanford Reach National Monument to protect all of the species associated with the shrub-steppe ecosystem. Included in the Memorandum of Understanding between

FWS and DOE for management of the Hanford Reach National Monument is, “The primary objective of the FWS is to ensure that the Monument is operated and managed for the protection and preservation of the native shrub-steppe habitat and its associated wildlife species.” The federal agencies are also charged with managing for species of importance to the Tribes. Therefore, the following species are included in this assessment. This list was developed by Heidi Newsome. For plant species of concern see Vegetation Assessment.

<u>SPECIES</u>	<u>LISTING STATUS</u>
Ferruginous hawk, <i>Buteo regalis</i>	FSC/ST
Burrowing owl, <i>Athene cunicularia</i>	FSC/SC
Loggerhead shrike, <i>Lanius ludovicianus</i>	FSC/SC
Sage sparrow, <i>Amphispiza belli</i>	FSC/SC
Greater sage grouse, <i>Centrocercus urophasianus</i>	C/ST
Washington ground squirrel, <i>Spermophilus washingtoni</i>	C/SC
Pygmy rabbit, <i>Brachylagus idahoensis</i>	E/SE
Black-tailed jackrabbit, <i>Lepus californicus</i>	SC
Striped whipsnake, <i>Masticophis taeniatus</i>	SC
Sagebrush lizard <i>Sceloporus graciosus</i>	FSC
Mule deer, <i>Odocoileus hemionus</i>	TI

The following listed species were identified as occurring, or having habitat within, Grant County. Through post fire reconnaissance and consultation with local experts, it was determined that these species were not affected by the fire because they have no habitat within or adjacent to the fire area, and/or inventories prior to the fire determined absence, or the fire is outside of the species range. For plant species of concern see the Vegetation Assessment.

Bald eagle, <i>Haliaeetus leucocephalus</i>	T/ST	
Bull trout (<i>Salvelinus confluentus</i>)		
– Columbia River distinct population segment	T	
California floater (<i>Anodonta californiensis</i>), mussel	FSC	
Columbian sharp-tailed grouse (<i>Tympanuchus phasianellus columbianus</i>)	FSC	
Giant Columbia spire snail (<i>Fluminicola columbiana</i>)	FSC	
Kincaid meadow vole (<i>Microtus pennsylvanicus kincaidi</i>)	FSC	
Long-eared myotis (<i>Myotis evotis</i>)	FSC	
Northern goshawk, <i>Accipiter gentilis</i>	FSC	
Sage thrasher, <i>Oreoscoptes montanus</i>	FSC	
Long-billed curlew, <i>Numenius americanus</i>	FSC/SM	
Pallid Townsend's big-eared bat, <i>Corynorhinus townsendii pallescens</i>		FSC
Northern leopard frog (<i>Rana pipiens</i>)	FSC	
Pacific lamprey (<i>Lampetra tridentata</i>)	FSC	
Redband trout (<i>Oncorhynchus mykiss</i>)	FSC	
River lamprey (<i>Lampetra ayresi</i>)	FSC	
Western brook lamprey (<i>Lampetra richardsoni</i>)	FSC	
Elk, <i>Cervus elaphus</i>	TI	

KEY TO LISTING STATUS:

E	FEDERAL ENDANGERED
T	FEDERAL THREATENED

C	FEDERAL CANDIDATE
FSC	FEDERAL SPECIES OF CONCERN
SC	STATE CANDIDATE
SE	STATE ENDANGERED
ST	STATE THREATENED
SS	STATE SENSITIVE
SM	STATE MONITOR
TI	TRIBAL IMPORTANCE

FERRUGINOUS HAWK

Ferruginous hawks are a federal species of concern, a federal Migratory bird of Conservation Concern (USFWS 2002) and a state Threatened species. Ferruginous hawks are migratory raptors that occur on the Hanford site during the breeding season from early March through August. The incubation period is 28-33 days with fledging at 44-48 days from the date the egg is laid. Ferruginous hawks prey on a variety of mammals, birds, reptiles and insects, depending upon local area and prey abundance. These hawks may forage up to 15 km (approximately 9 miles) from their nest site, however, nest success may be greater in areas where abundant forage is in close proximity to the nest location. Areas where prey densities are high, generally have greater successful nesting attempts. The average home range size of Ferruginous hawk in Washington state may be as large as 7,660 acres (31 sq. km = 11 sq. miles), based on hawks traveling considerable distances to forage (WDFW 1996).

FIRE IMPACTS: The entire 1386.6 acres of the 243 fire can be considered Ferruginous hawk habitat. Impacts to Ferruginous hawks from the 243 Fire are indirect and include a reduction of habitat diversity that supports prey for Ferruginous hawks, reduction of habitat for foraging and nesting Ferruginous hawks. The Washington Department of Fish and Wildlife considers the Ferruginous hawk a priority species for management and recognizes that they benefit from land-use practices that ensure an adequate prey base. WDFW recommends that Landowners/managers should protect shrub-steppe and grassland habitats that harbor significant populations of small mammals and other prey (Richardson et. al. 2004).

Further, WDFW recommends reseeding of native plant species after chaining or burning to promote habitat stability and to benefit ferruginous hawk prey populations (Richardson et al. 2004, Olendorff 1993). Therefore, stabilization and rehabilitation of the habitat lost in the 243 fire in and around the historic nest location is essential, to support an abundance of prey species, and to develop critical foraging and nesting habitat for the Ferruginous hawk. Stabilization and rehabilitation of suitable habitat for nesting and foraging around these historic nest sites is likely critical for the recovery of this species in Washington state.

BURROWING OWL

Burrowing Owls are a federal species of concern, a Migratory bird of Conservation

Concern (USFWS 2002), and a state candidate species, and a state priority species. Prior to the fire, this area was considered potential habitat for burrowing owls, and although the fire area had not yet been systematically surveyed for burrowing owls.

Burrowing owls are small ground-dwelling species associated with dry, open, shortgrass, or desert and are often linked with burrowing mammals. Foraging areas are typically short grass dominated habitats, food items include predominately invertebrates and small mammals, and occasionally small birds and reptiles. Within the Columbia Basin, Western burrowing owls are primarily migratory and are present from February through early August, although a few individuals over-winter. The Western burrowing owl is thought to be declining throughout central Washington and much of its range in North America. It is also apparently declining at the Hanford Site. Once thought relatively common, they are now rarely observed. The regional decline of ground squirrels, which provide nesting sites for these owls, is possibly linked with the apparent decline in owl populations. The potential decline in population is not unique to the Monument/ Refuge and may be characteristic of the species population trend throughout eastern Washington. The 243 fire burned some areas of very sandy soils that are not likely burrowing owl habitat, however, approximately 320 acres of the fire area can be considered habitat for Burrowing owls.

FIRE IMPACTS: Impacts to Burrowing Owls from the 243 Fire are indirect and include; impacts to invertebrate and small mammal prey populations, a reduction of habitat diversity that supports prey for burrowing owls, and reduction of habitat for foraging burrowing owls. The elimination of shrubs effectively reduces almost all natural perch locations for burrowing owls. Shrubs are also important to burrowing owls as thermal cover, adults and juvenile owls seek thermal cover in the shade of shrubs during mid-day periods. Further, elimination of shrub cover may expose small mammals to higher predation rates and consequently may reduce the local abundance of small mammals. Burrowing owls are also prey for other raptor species. Reduced plant biomass, and loss of cover could result in a higher predation rate on individual burrowing owls within the burn area. Clearly, stabilization of the grassland and shrubland habitat that supports burrowing owls will make this area more viable as burrowing owl habitat in the future. Without stabilization and rehabilitation, it is unlikely that burrowing owls would use this area in the future.

LOGGERHEAD SHRIKE

The Loggerhead shrike is a neo-tropical migrant species that breeds on the Monument. Loggerhead shrikes are a federal species of concern, listed as a Migratory bird of Conservation Concern (USFWS 2002), and are a state Candidate for listing as a Threatened species. There are documented sightings of shrike in the fire area during the breeding season. Further, it is likely that there were additional breeding territories in the fire area based on habitat prior to the fire and the fact that this area has not been systematically surveyed for shrikes.

Loggerhead shrikes are common on the Hanford site from early March until the end of August. After August numbers are reduced but individuals have been sited through early November. Loggerhead shrikes require mature sagebrush, or other

shrubs, for breeding and foraging habitat. Shrikes are most abundant in habitats of relatively high horizontal and vertical structural diversity (Poole 1992). This species builds its nest within shrubs, and requires some sort of shrub or other habitat feature when foraging for "impaling" its prey. The species is well known for its unusual and complex behavior of impaling prey on sharp objects in conspicuous places or wedging prey in narrow V-shaped forks (Yosef, R. 1996). The primary prey items of this species are insects (beetles, grasshoppers, etc.), although small mammals, small birds, and lizards also taken as prey (Yosef, R. 1996). Loggerhead shrikes are highly territorial, and they exhibit a high level of nest site/territory fidelity. Poole (1992) found that shrikes defended territories averaging 34.4 acres (\pm 4.9 ac) on the Hanford Site in Washington. Also on the Hanford Site, 113 territories studied, 96% were reoccupied the following season (Poole 1992). Shrikes remain in breeding territories as fledglings for 3-4 weeks after leaving the nest. This post fledging period is the time of highest mortality for shrikes, when young birds are weak fliers and are vulnerable to predation (Poole 1992).

The loggerhead shrike is one of the few North American passerines whose populations have declined continent wide in recent decades (Yosef, R. 1996), and in Washington Breeding Bird Survey data for the Columbia River Basin shows a significant decline in the shrike population over the last 26 years (Vander Haegen 2004). Burning and wildfires may create the greatest risk to local shrike populations because the damage is immediate and regeneration to pre-burn condition may take up to 30 years (Harniss and Murray 1973).

FIRE IMPACTS: The entire 1386.6 acres of the 243 fire can be considered habitat for Loggerhead shrike. Impacts from the 243 Fire to the shrikes are both direct and indirect and include; loss of nests with nestlings, potential greater mortality to fledgling young in the fire area due to loss of hiding cover, loss of prey base, loss of habitat for nesting and foraging, loss of structural diversity of habitat required for shrike utilization of the area. Because shrikes exhibit fidelity to nesting territories, individuals that attempt to return to former territories in subsequent breeding seasons will find them void of nesting cover and structure. Additionally, displacement of individual breeding pairs into other areas may increase inter- and intraspecific competition for nesting territories. If suitable habitat areas were already occupied by breeding pairs, displaced pairs may not be able to locate territories, or will be forced to utilize marginal habitat types. Breeding success would likely decline for pairs that have been displaced by fire impacts to their breeding habitat.

The Washington Department of Fish and Wildlife considers the shrike a priority species for management and provides the following management recommendations for loggerhead shrike habitat; retain shrub-steppe communities-especially big sagebrush and mixed shrub communities, avoid wildfires and activities that may increase invasion by exotic vegetation, avoid management activities that increase cheatgrass invasion or increase risk of wildfire (Vander Haegen 2004, Leu and Manuwal 1996). Stabilization and rehabilitation of the habitat within the fire area is critical for Monument management

of this declining species.

SAGE SPARROW

Sage sparrows are a federal Migratory bird of conservation concern (USFWS 2002), and a state Candidate for listing as a threatened species. Sage sparrows are a migratory sparrow present in the Columbia Basin during the breeding season from early February until the end of September. Sage sparrows prefer semi-open habitat with evenly spaced shrubs 1-2 meters high (Martin, J. W., and B. A. Carlson. 1998). This species is associated with sagebrush throughout its range. Sage sparrows forage on the ground for seeds and invertebrates. On the HRNM/SMNWR, sage sparrows are abundant in areas that retain big sagebrush communities. The Hanford Site, along with the Yakima Training Center to the west, supports the largest contiguous habitat patches in Washington for this state Candidate species. Exceptional habitats with apparent high densities of sage sparrows are found in big sagebrush stands along the base of the Saddle Mountains, throughout sagebrush habitats on the Columbia River plains, and within Central Hanford. Sage sparrows are confirmed breeders on the site, and they frequently raise more than one brood per season. They are territorial and exhibit site fidelity to nesting territories. Flocks of juveniles are frequently observed along roadsides from late May throughout the beginning of August.

FIRE IMPACTS: Adult sage sparrows had probably initiated their second or third nesting effort, these nests were probably destroyed by the fire. Although sage sparrows are mobile animals, their individual behavioral site fidelity to their nesting territories may have increased their susceptibility to direct loss during the fire. Large flocks of juvenile sage sparrows are generally observed during this time period. These recently fledged birds may have been displaced due to the fire. The entire 1386.6 acres of the 243 fire can be considered sage sparrow habitat. The big sagebrush vegetation within the burn area experienced mortality of 85-90 percent of the sagebrush plants. Therefore, virtually the entire available sage sparrow habitat in the fire area was lost due to the fire. Due to the loss of shrub cover, adult birds with established territories probably returned to a highly altered habitat condition. These birds were probably displaced due to the fire. Because sage sparrows exhibit fidelity to nesting territories, individuals that attempt to return to former territories in subsequent breeding seasons will find them void of nesting cover and structure. Additionally, displacement of individual breeding pairs into other areas may increase inter- and intraspecific competition for nesting territories. If suitable habitat areas were already occupied by breeding pairs, displaced pairs may not be able to locate territories, or will be forced to utilize marginal habitat types. Breeding success would likely decline for pairs that have been displaced by impacts to their breeding habitat from the fire.

The increasing frequency and intensity of range fires in Great Basin pose significant threat to native grasses and shrubs. Historically, fires were infrequent, and perennial grasses and shrubs were not adversely affected. With increased fire frequency, native plants are killed and seed reservoirs of grasses and shrubs are depleted and replaced with exotic annuals, such as cheatgrass (*Bromus tectorum*). Sage sparrows abandon

former habitats once invaded by cheatgrass (Martin, J. W., and B. A. Carlson. 1998). Thus, replacement of native vegetation by cheatgrass in areas disturbed by the fire will decrease the available habitat for sage sparrows. Because sage sparrows require open areas and bare ground for foraging, changes in vegetation structure and loss of sagebrush due to the fire will impact foraging by sage sparrows. Stabilization and rehabilitation of this area to prevent the spread of cheat-grass and to replace lost shrub habitat is essential to maintain this area for sage-sparrows.

GREATER SAGE GROUSE

Greater sage grouse are listed as a State-threatened and the Columbia Basin distinct population segment is designated a Federal Candidate for listing as threatened. Two small, disjunct remnant populations of sage grouse occur in Washington (USFWS 2000). One population is in Douglas County, approximately 75 miles north of Hanford, and the second is on the Army's Yakima Training Center (YTC) in Yakima and Kittitas Counties, just northwest of the Hanford Site. The Douglas County population is estimated at approximately 600 individuals and the YTC population at approximately 200 individuals.

As recently as 1999, the YTC population appears to have begun to expand into that portion of the Monument included in the ALE Unit. Several sage grouse sightings were made in 1999 and 2000 in the vicinity of Rattlesnake Springs and Benson Ranch (USFWS 2000). Additionally, recent translocations of sage grouse to the YTC area have documented movements of radio collared sage grouse onto the Saddle Mountains just north and east of Desert Aire, in close proximity to the 243 fire area.

Greater sage grouse nesting habitat in southeastern Washington is primarily sagebrush steppe vegetation that is of relatively high-quality (dominated by native species). Sagebrush intermixed with tall bunch grasses provides cover required for successful nesting (USFWS 2000). Brood rearing habitat includes the shrubs and tall grasses for escape cover, but also must include a mix of native forbs that provide both insect (prey) habitat and high protein vegetation. Sagebrush is an essential element for sage grouse during the late fall, winter and early spring, when the leaves of sagebrush make up as much as 99 percent of the birds' diet (USFWS 2000).

An interagency working group was established in 1998 to assist with the recovery of the sage grouse in Washington (USFWS 2000). Several agencies (U.S. Army, USFWS, the WDFW, the U.S. Department of Energy, and the Yakama Nation) are working to preserve and restore sage grouse in eastern Washington State. It is noteworthy that the Hanford Site property (Monument area) was identified as one of the few large land areas having contiguous and high-quality habitat suitable for sage grouse recovery and expansion (USFWS 2000).

FIRE IMPACTS: Because no sage grouse were apparently present during the fire, only indirect impacts occurred. Indirect impacts from fire and fire suppression were loss of habitat (nesting habitat, winter and summer shelter habitat, escape cover losses and

food resources lost). Recovery of sage grouse habitat in this area will probably take many years. In addition, the forbs and invertebrates which are the preferred food for this species were effectively eliminated throughout most of the fire area. Although lost habitat would probably only support a small sage grouse population, this recent fire, when combined with several other large fires on the Monument area over the past seven years, has impacted over 100,000 acres of potential grouse habitat on the Monument. The cumulative impact from these fires on the habitat condition for sage grouse cannot be over-stated. This cumulative habitat loss may delay or prohibit recovery of the western sage grouse in the State of Washington.

Due to the significant amount of habitat cumulatively lost, and because any remaining sagebrush on ALE lands does not occur in the large blocks apparently needed for survival, it is expected that this area will not support sage grouse for 30 or more years (USFWS 2000). The arid nature of the site may further delay recovery because germination and growth of shrub species depends upon amount and timing of available moisture. Reseeding and replanting of native grasses, forbs and shrubs will facilitate the recovery of the habitat in this area for sage grouse.

SAGEBRUSH LIZARD

The sagebrush lizard is a federal species of concern and a state candidate species for listing as a threatened species. Sagebrush lizards emerge from hibernation in April, mating occurs in April and May and females lay their eggs in June, burying them in loose soils at the base of a shrub. Hatching normally occurs in August (Storm, R. M. and W. P. Leonard, 1995). Recent research in Oregon suggests that the Sagebrush Lizard is limited to habitats that have sandy soils. In Washington, all recently confirmed sites are associated with sand dunes or other sandy habitats (Hallock, L.A. and McAllister, K.R. 2005). The Washington Department of Fish and Wildlife recommends that any activities that alter these habitats, such as conversion to agriculture and/or activities that promote the invasion of cheat grass (*Bromus tectorum*), are likely detrimental to Sagebrush Lizard populations (Hallock, L.A. and McAllister, K.R. 2005). Therefore, preventing encroachment by cheat grass post fire is important in maintaining the habitat for sagebrush lizard within the fire area. Stabilization of the area to native grass species will be important for management of this species in the area.

FIRE IMPACTS: The entire 1386.6 acres of the 243 fire can be considered sagebrush lizard habitat. The lizard eggs were probably not yet hatched, it is likely that any eggs, and young of the year were lost during the 243 fire within the fire area. Adult lizards may have also been lost in the fire because they would seek shelter within shrubs. Shrubs have longer fire residency times and burn hotter than surrounding grasses, and therefore lizards likely experienced direct mortality. Those adult lizards that survived the burn, are probably now exposed to predation, as removal of the shrubs would remove any hiding cover. Greater predation by avian and other predators post-fire is expected, which will reduce the population of sagebrush lizards in the fire area. Because little detail is known about the life history and habitat requirements of this species, protecting the lizard's habitat is important to managing for the population on the Monument. Preventing the invasion of cheat grass post-fire is essential for

maintaining the population of sagebrush lizards within the fire area.

STRIPED WHIPSNAKE

Striped whipsnakes occur in the Columbia Basin of Central Washington up to 1,985 feet elevation. This is a long slender snake that is dark above with alternating light and dark stripes down the length of the body. Adults range in size from 90 to 180 cm total length. The belly is white and the underside of the tail is pinkish or coral colored. The eyes are large and the pupil is round. The scales are smooth with 15 rows at mid-body.

This species is rare throughout most of the Washington portion of its range. Striped whipsnakes have been documented in Washington only 26 times. In the last decade, only 3 observations have been reported. Habitat for this species is low elevation arid regions with scattered vegetation and open rocky areas. Mating occurs in the spring with eggs being deposited in June. Eggs hatch in the late summer or early fall. This species has been documented to occur at the Hanford site and on SMNWR. Little is known about the habitat requirements in Washington. The areas of Grant County where they occur have relatively undisturbed shrub-steppe habitat with a low cover of cheatgrass.

FIRE IMPACTS: The entire 1386.6 acres of the 243 fire can be considered striped whipsnake habitat. If present during the fire, striped whipsnakes could have experienced mortality if unable to move quickly or find a burrow. Those that survived would experience temporary displacement. Eggs exposed to heat would have been rendered unviable. Suppression actions which included blading of soils to remove vegetation may have exposed nest sites, thus exposing eggs to environmental conditions and predators. Prey species are primarily lizards, but may include rodents, bats, frogs, birds and other snakes. Habitat for any of these types of species within the fire area was greatly reduced. Therefore, prey species may be less available for the striped whipsnake until the habitat recovers and is repopulated by the various prey species. Invasion of cheat grass into the fire area will reduce the likelihood that this area would recover into habitat that could support striped whipsnakes.

WASHINGTON GROUND SQUIRREL

This area is also potential habitat for the Washington Ground Squirrel, a federal and state candidate for listing as a Threatened species. The Washington ground squirrel is a brownish-gray squirrel with conspicuous white spots on the dorsum. This species occurs only in Washington east of the Columbia River. It prefers sandy soils in dry, open, sagebrush and grassland habitats. This species hibernates 7-8 months per year from June/July through January/February. These squirrels eat succulent vegetation and bulbs in early spring and seeds in the early summer. Burrows are usually about ≤ 3 inches in diameter and entrances are often hidden under bushes or rocks (Yensen, E. and P. W. Sherman. 2003.). There are no known burrows within the fire area however this area has not been thoroughly surveyed to date.

FIRE IMPACTS: Any Washington ground squirrels within the fire area would have been hibernating during the fire. However, depending upon heat and fire intensity, animals

may have suffered mortality within their burrows. The removal of shrub cover will impact the habitat for Washington ground squirrels which require shrubs for hiding cover as protection from predation. Further, the potential conversion of native bunch grass areas to annual grasses (cheat grass) will impact the habitat for Washington ground squirrels. Habitat degradation of rangelands and shrub-steppe areas is recognized as a major cause of decline in this species (Yensen, E. and Pp. W. Sherman. 2003). Stabilization and rehabilitation of the area is important to maintain the potential for the area to eventually support Washington ground squirrels.

COLUMBIA BASIN PYGMY RABBIT

This species is extremely rare in Washington only in the Great Basin portion of the Lower Columbia Basin and was emergency listed as a federally endangered species in November of 2001. The pygmy rabbit is limited to habitat types which contain tall dense sagebrush, and specific soils with limited content of sand for constructing it's burrows. Field observations of the pygmy rabbit indicate heavy reliance on sagebrush, primarily the seed heads and vegetative leaders. Pygmy rabbit diet is comprised of 99% sagebrush in winter and 51% in summer.

FIRE IMPACTS: Prior to the fire, this area of the SMNWR supported approximately 1200 acres of potential habitat for Columbia basin pygmy rabbit, based on a GIS analysis of soils and vegetation (Meisel unpublished data, 2005). The stabilization of sagebrush cover in this area is critical to developing the potential habitat for pygmy rabbit. This area may be important for the eventual recovery of pygmy rabbit in Washington.

BLACK-TAILED JACK RABBIT

The entire 1386.6 acres of the 243 fire can be considered black-tailed jackrabbit habitat. The black-tailed jackrabbit was once abundant throughout the Columbia Basin. Recent precipitous declines in populations of these hares have raised concerns regarding its distribution and status throughout the region. This species is closely associated with the sage brush steppe ecosystem. Black-tailed jackrabbits rely on sage brush structure for breeding sites and hiding cover, and require sage-brush vegetation as forage during winter months. Hares, unlike rabbits, do not use burrows. They place their young in shallow depressions in the soil called "forms". Jackrabbits are generally solitary and primarily nocturnal. They are vulnerable to predators including, coyotes, bobcats, foxes, hawks, owls, and snakes. Loss of habitat due to agricultural and human development has impacted jackrabbit populations. The fragmentation and isolation of populations residing within remnant habitat areas, has probably increased their vulnerability to stochastic events (e.g. severe weather, disease, fire, etc.) and has limited the re-colonization of areas that could potentially support jackrabbit populations.

FIRE IMPACTS: Black-tailed jackrabbits are known to be relatively fast moving animals. Because these animals are highly mobile, it is anticipated that they would have been able to move out of the way of the fire. Young rabbits, however, if present may have

been overwhelmed by the fast moving fire. The loss of sage brush structure and cover reduces the amount of hiding cover for this species, and will increase the vulnerability of jackrabbits to predation. Additionally, the loss of a significant continuous stands of sage exacerbates this effect, because smaller patches do not provide escape cover. If jackrabbits are chased out of the remaining small patches of cover, they will be forced into the open burned over areas and be easily captured and consumed. Further proximity of this area to state Highway and county roads could force jackrabbits onto roads and into traffic putting them at risk of mortality from impact with vehicles. Impacts to the local jackrabbit population will also affect those animals that prey on jackrabbits, as jackrabbit numbers decrease, there will be less forage for other animals that prey upon jackrabbits.

MULE DEER

Mule deer are a common resident ungulate of the Hanford area. The area of highest density is along the Columbia River. The deer population in the Hanford area is relatively stable. Deer frequently move offsite and are killed by hunters on adjacent public and private lands. Mule deer are primarily browsers and rely on riparian vegetation and bitterbrush for browse. The loss of a significant stand of bitterbrush in this area will likely reduce the areas habitat capacity for supporting mule deer. Hunting has not been allowed on any Hanford lands exclusive of the former Wahluke slope wildlife recreation area north of the Columbia River, and there is only limited public use consisting primarily of research activities. Many of the mule deer on the SMNWR reach unusual size, with many animals in older age classes due to the sanctuary that the area provides.

FIRE IMPACTS: Mule deer are highly mobile animals, and it is anticipated that they were able to move out of the affected area during the fire. Recently born fawns, however, may not have been able to move out of the way of the fire, although no mortality of deer fawns was documented during post fire reconnaissance. The greatest impact to mule deer within the burn area is loss of available forage. Regrowth of grasses in upland areas is not anticipated until fall rains begin, possibly in November. Mule deer may forage off of the burn area on private lands, however, because deer are more solitary than herding ungulates (e.g. elk) agricultural depredation is not usually an issue with deer. However, vulnerability to hunting mortality will be increased if deer remain off of the burn area into the late summer and fall hunting season. Private lands adjacent to the burn area are open to hunting. Additionally, deer may also experience some nutritional stress due to loss of forage due to the fire. Lactating does may be at the greatest risk of this type of stress because of the energy demands that lactation produces.

IV. RECOMMENDATIONS

A. Fire Suppression:

Determinations of effect: The wildfire may be likely to effect some of the listed species due to indirect impacts from loss of habitat. The fire suppression actions and proposed emergency stabilization are not likely to adversely affect to the federally listed species, and likely will positively benefit listed species by preventing the further degradation of the habitat in the area. This document constitutes the emergency Section 7 Consultation for the 243 Fire stabilization and emergency rehabilitation. The supporting information is in the Section with Environmental compliance.

B. Burned Area Rehabilitation:

Recommendations with Specifications:

- #1 - Non-native Invasive species control.. This specification is critical, as mentioned above in wildlife species assessments, to prevent the invasion of non-native plants and to prevent the degradation of the site and it's potential to recover into functioning shrub-steppe. Also this will assist in creating a trajectory of recovery that will eventually result in viable habitat conditions for all 11 of the listed species addressed above.
- #2 - Non-native Invasive species control, Native seeding. This specification is critical, as mentioned above in wildlife species assessments, to stabilize the ecological integrity and condition of the burned area and to create a trajectory of recovery that will eventually result in viable habitat conditions for all 11 of the listed species addressed above.
- #4 - Non-native Invasive species control, Native plantings. This specification is critical, as mentioned above in wildlife species assessments, to stabilize the ecological integrity and condition of the burned area and to create a trajectory of recovery that will eventually result in viable habitat conditions for all 11 of the listed species addressed above

C. Management recommendations (Non-Specification Related):

- Permanent photo points and monitoring plots should be established in key wildlife habitat locations to monitor habitat recovery. This should be coordinated with the vegetation monitoring as recommended in the 243 Fire BAER Vegetation Report.
- Small mammal monitoring should be conducted using existing trapping grids and should be expanded as needed to determine prey species abundance for the various fire affected species. Reptile monitoring should be conducted and should be expanded as needed to determine potential effects of the fire and associated habitat loss on reptiles.

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BURNED AREA REHABILITATION PLAN

243 Fire

VEGETATION RESOURCE ASSESSMENT

II. OBJECTIVES

- Evaluate and assess fire and suppression impacts to vegetation resources and identify values at risk associated with vegetation losses.
- Determine emergency stabilization and monitoring needs supported by specifications to aid in vegetation recovery and soil stabilization.
- Evaluate potentials for invasive species encroachment into native plant communities within the fire area.
- Provide management recommendations to assist in vegetation recovery, watershed stabilization, site productivity and species habitat protection and rehabilitation.

II. ISSUES

- Protection and enhancement of other resource values including site productivity, wildlife habitat, vegetation resources, cultural resources and watershed stability.
- Management strategies which provide for the stabilization, natural regeneration and recovery of impacted areas.
- Immediate stabilization of denuded (i.e. vegetation has been removed) soils that may cause a safety hazard due to blowing dust
- Monitoring of the planting/seeding effectiveness of emergency stabilization efforts.
- Monitoring of impacted lands for the early detection and control of invasive and noxious weed species.

III. OBSERVATIONS

This report identifies and addresses known and potential impacts to vegetation resources within the 243 Fire area, Saddle Mountain National Wildlife Refuge (SMNWR). The burned area consists of 1386.6 acres of contiguous area, all of which were within the boundaries of the Hanford Reach National Monument (Monument). The vegetation resources can be described as Columbia Basin shrub-steppe plant communities, many of which are considered high-quality or sensitive vegetation. These vegetation resources provide forage and cover for a variety of wildlife species, aesthetic values, watershed stability, and biologically diverse plant associations. Findings and

recommendations contained within this assessment are based upon field reconnaissance of the fire area, interviews with local resource specialists, local land managers, and review of relevant documents and literature.

This report will detail the known damage to the vegetation and soil resources; will discuss re-vegetation processes and future monitoring criteria, and will outline management considerations for recovery of vegetation resources.

B. Reconnaissance Methodology and Results

Ground reconnaissance was not conducted. The fire burned in a mosaic pattern on approximately 20 % of the fire area. Vegetation resources were significantly reduced over the remainder of the fire area. The fire consumed 75% of the standing biomass of shrubs, grasses, forbs or killed remaining shrubs through heat scorch over approximately 85 % of the fire area. Blowing dust and ash was observed in areas where all vegetation had been burned and the soils are no longer stabilized by the vegetation.

Literature and GIS data available at the Monument headquarters relating to vegetation resources in the area was consulted for baseline data relating to pre-fire conditions on the burned area.

1. Soils:

Soils within the fire area consist of slackwater fines from Pleistocene floods, sandy clay, sandy loam, and previously stabilized eolian dune systems. The Pasco Basin, and the entire region, is underlain by Miocene-aged basalt that is thousands of feet thick. While the basalt is exposed along the margins of the basin along uplifted anticlines, outcrops in the study area occur only near the crest of the Saddle Mountain anticline, which forms the northern edge of the basin. At lower elevations, the basalt is deeply cloaked beneath ancient sediments deposited by lakes and rivers that flowed into the basin between 8.5 and 3.4 million years ago (Ringold Formation, Late Miocene to Pliocene) and then by loads of sediment deposited during cataclysmic floods that occurred over a period of more than 1.5 million years (Hanford Formation, Pleistocene; Bjornstad and others 2001).

The Ringold Formation is comprised mostly of sand, silt and clay in its upper layers, some of which are cemented by calcium carbonate (Lindsey 1996). At its maximum level, Ringold sediments filled the basin to at least approximately 275 meters elevation. Remnant uplands at this elevation are the Overlook, NIKE and Simmons benches¹, which are located near the east margin of the study area. Between these three

benches and Saddle Mountain, the Ringold was carved into a drainage basin by an ancestral river as it flowed west across the study site to join the Paleo-Columbia River (Fecht and others, 2004). The lowest, incised channel(s) of this ancestral river was filled with sand-dominated sediments (Fecht and others, 2004). The sediments in the channel are equivalent in age to the Ringold lacustrine deposits and/or to Ringold paleosols.

Subsequently, between 3.4 and 2.0 million years ago a major drop in the base level occurred, which caused regional downcutting (Baker and others 1991). As a result, the Columbia River migrated eastward and began incising the Ringold Formation to create the White Bluffs and expanded the flood channelways (Baker and others 1991). Along the White Bluffs, the incised, sediment-filled Paleo-river channel was exposed at three sites: north of Saddle Mountain Lake, above Locke Island, and south of the Wiehl ranch (Fecht and others, 2004). The sand-dominated sediment in these exposures has less integrity than the surrounding White Bluffs matrix, and it is currently the primary source of material for active dune sets in the study area. The sediments north of Saddle Mountain Lake are equivalent in age to Ringold lacustrine deposits, while the sediments exposed above Locke Island and south of the Wiehl ranch are filled with laminated glacio-fluvial sands and massive eolean sands (Fecht and others, 2004).

At the Saddle Mountain Lake site, sediment from the exposed Paleo-drainage, together with eolean sediments, cloaks the west end of White Bluffs and fingers onto the gravel-dominated flood channelways. The sandy substrate is typically stabilized to some extent by vegetation, except locally along dune ridges and in blowout dunes. The effectiveness of vegetation to stabilize sandy sites likely fluctuates over time in response to precipitation patterns, fire, physical disturbance, herbivory, and other changes in species dominance.

The 243 fire has removed approximately 75% of all vegetative cover within the fire area leaving the sandy soils exposed to wind erosion. High winds are prevalent within this area and wind speeds of 20 MPH plus are common. During field investigations it was noted that all ash had blown off of the sandy soils and dust clouds were visible.

High wind warnings are commonplace within the Monument and dust storms often suspend work within the Hanford Nuclear Site. State Highway 243 is adjacent to the fire area and reduced visibility during high wind events is a concern for Monument managers. Dust storms from the fire area now threaten life and property of the general public traveling on Highway 243 through the fire area. Emergency stabilization actions are required to reduce soil erosion, protect site productivity and protect life and property in and around the fire zone.

2. Vegetation:

The 243 fire burned 1386.6 acres of federal lands north and east of the Vernita Bridge, on the western portion of the SMNWR. The area is part of the recently designated Hanford Reach National Monument. The Monument area was identified as unique and deserving of full protection by Presidential proclamation in 2000. One of the unique features of the Monument that contributed to its establishment is the diversity and vast size of native plant communities. The area has been surveyed by The Nature Conservancy of Washington and the Washington Natural Heritage Program. These surveys have identified a total of 17 terrestrial, native plant community types (or elements) that occurred as 48 separate element occurrences on the Monument. These elements are unique in the state for their character and plant associations. Additionally, 112 populations/occurrences of 28 rare plant taxa were located across the Hanford Site.

Primary plant communities impacted by the fire included the following plant associations:

Needle and Thread Grass/Antelope Bitterbrush/Wyoming Big Sagebrush: Big sagebrush is codominant shrub in this area with antelope bitterbrush (*Purshia tridentata*).

Antelope Bitterbrush/Sandberg's bluegrass/Cheatgrass: Wyoming big sagebrush (*Artemisia tridentata*) is frequently present and sometimes co-dominant. This cover type sometimes occurs in interdunes with sorted fine-textured substrate, often with significant cover from Gray and green rabbit brush (*Chrysothamnus nauseosus*, *C. viscidiflorus*) and snow buckwheat (*Eriogonum niveum*), and with some cover from Needle and thread grass and Indian Rice grass (*Stipa comata*, *Oryzopsis hymenoides*). Some areas with this cover type have a high cover of microbiotic crust, which is facilitated by north and neutral aspects, deposition of loess and slightly higher elevations. *Purshia tridentata* currently persists best in areas that don't burn regularly, probably due to low fuel loads or more protected positions in the landscape relative to ignition sources. Where *Eriogonum niveum* co-occurs, some open sand is indicated. Another phase of this cover type occurs on gravel and cobble along the south-facing upper slope of Priest Rapids Bar, where *Salvia dorrii* and occasionally *Grayia spinosa* also occur (Easterly, R. and D. Salstrom. 2004.)

Spiny Hopsage/ WyomingBig Sagebrush/Sandberg's bluegrass: This community type is characterized by spiny hopsage (*Grayia spinosa*) Wyoming big sagebrush, Sandberg's bluegrass, and low forb diversity. The plant community type is generally confined to locations with soils that are finer-textured than is typical for needle-and-thread associations.

Big Sagebrush/Sandberg's bluegrass/Cheatgrass: This community is primarily

composed of Big sagebrush with an understory dominated by Sandberg's bluegrass (*Poa secunda*) mixed with cheatgrass (*Bromus tectorum*). While they often commingle, *P. secunda* and *B. tectorum* are frequently ecologically separated on a fine scale (Easterly, R. and D. Salstrom. 2004.). With Sandberg's bluegrass dominant over cheatgrass in the interdune areas, areas with specific microclimates with slightly higher moisture, for example, in specific micro-topographic areas, or in areas under shrubs.

Winterfat/Sandberg's bluegrass: This plant community is primarily composed of winterfat (*Eurotia lanata*) and Sandberg's bluegrass. The abundance of winterfat may be much reduced from what it was historically with these few areas representing remnant pockets of this vegetation type. Winterfat likely has been locally extirpated from large areas of the site in which it was historically abundant (Easterly, R. and D. Salstrom. 2004.).

Purple sage/cheatgrass: *Salvia dorrii/Bromus tectorum*. The structure is generally open, with little cover by grass. This type generally occurs on coarse, gravelly substrates.

Species diversity within each of the major community types has been altered in some areas due to the activities of neo-European people that entered the region beginning 200 years ago. In more recent history, alien plants were introduced and established a foothold in the shrub-steppe communities with the advent of livestock grazing in the mid-1800's and through agricultural cultivation and urbanization later in the century. More recently, this area has been extensively impacted by grazing activities administered by the Washington Department of Fish and Wildlife during the 1970's and 80's.

Vegetation within this area has also been altered through the establishment of cheatgrass within sage communities and the shortening of the natural fire return interval. Historically, fire return intervals were between 50-100 years in the shrub-steppe region. Fires burned in a mosaic fashion across the landscape leaving many healthy remnant stands of bunchgrass and sage. The mosaic fire patterns allowed for the survival of healthy sage communities and habitat for wildlife species.

Within the Big sagebrush community, cheatgrass provided ladder fuels for fire to quickly spread into and throughout these stands. In areas where native bunchgrass dominated the understory, fire impacts to some shrub stands were greatly reduced.

3. Vegetation/Structural Impacts

Vegetation resources were directly impacted by the 243 Fire and by suppression tactics utilized to control the fire. Documented impacts to vegetation resulted from:

- a) Construction of diskline on previously undisturbed sites.

- b) Impacts to native microbiotic crust, shrub and grass species during line construction, suppression and mop-up activities
- c) Vegetation losses due to fire intensity. Most sagebrush and grassland communities were completely consumed and/or scorched. Some additional loss is expected within remaining shrub communities.
- d) Loss of the organic litter layer on approximately 90 percent of the fire area.
- e) Damage to structural improvements, (e.g. boundary fence) by suppression actions. Fences were cut or damaged.

Generally speaking, most sagebrush and bunch grass communities experienced greater than 75% vegetation loss of above ground cover. On approximately 80% of the fire area, complete consumption of vegetation resources was observed. Most shrub, grass and forb species and organic material on the soil surface was consumed indicating extreme fire intensity.

A mosaic burn pattern was observed and mapped on approximately 20% of the fire area. However, in these areas some loss of shrubs is still predicted to occur due to mortality from heat produced by the fire and seasonally dry weather conditions.

Most of the forb species were consumed. Although the fire burned at varying intensities across the landscape, in most cases the residency time of the fire was short enough so as not to damage the soil, existing root systems, or reduce native seed banks in the known habitats of these plants. Burying of native seeds through wind deposition of soils now threatens the natural regeneration of native species in sandy soil types.

Negative impacts resulting from vegetation losses include a significant reduction in wildlife habitat, forage for wildlife species, visual quality degradation, increased non-native species invasion, bare soils, and reduced species diversity. The loss of wildlife habitat, and potential impacts to Threatened and Endangered Species are discussed further within the Wildlife Assessment.

Ground disturbing impacts to SMNWR property came in the creation of fire breaks using bulldozers and disks. A complete inventory was conducted of disked lines and dozerlines on the fire area and emergency stabilization needs assessed (see Operations assessment).

Additional losses surveyed during field reviews were fire impacts on boundary fences. Boundary fence between SMNWR and private lands were negatively impacted. Stretch posts and wire were damaged by the fire and will require repair. (See Operations Assessment).

B. Vegetation Recovery

Revegetation of the fire area through natural processes will take between 7-30 years to visually represent pre-fire conditions. However, due to the presence of non-native plants and noxious weeds, the site is at risk of becoming dominated by non-native annuals, in particular, cheatgrass. Without active restoration it is unlikely that the site will recover to its pre-fire characteristics. Some impacted plant communities will take decades to re-establish back to pre-fire levels. Most research indicates that fire will eliminate spiny hopsage altogether and sagebrush for at least several years. Because big sagebrush reproduces by seed and not by sprouting, recovery can be very prolonged on many sites. Concern has been expressed about the re-establishment of critical sagebrush communities for agency listed T&E wildlife habitat and the protection of the ecological integrity of the shrub-steppe community.

Other direct impacts to vegetation include the loss of shrub lands previously occupied by dense vegetation which are now open and traversable. Although the fire area is within a closed section of the SMNWR, increased trespass use into areas might be expected and could have negative impacts to wildlife, microbiotic crusts, government property, vegetation recovery, and cultural resources. Impacts to natural regeneration process and the protection of cultural resources will be jeopardized if travel/ trespass within the fire area is not monitored for the remainder of this calendar year.

1. Noxious Weed Establishment

Invasive alien plant species pose one of the most serious threats to the native biodiversity, wildlife habitat, and scenic values which the Hanford Reach National Monument was declared to protect, and for which the entire Hanford Site is well known (Soll et al. 1999). At Hanford, as elsewhere in western North America, invasive and noxious alien plant species compete against and reduce habitat available for rare plant taxa and native plant species in general. Weeds alter ecosystem structure and function, disrupt food chains and other ecosystem characteristics vital to wildlife (including rare and endangered species), and can dramatically alter key ecosystem processes such as hydrology, productivity, nutrient cycling, and fire regime. Conditions created by wildfire favor the spread of many noxious weed species (Evans, J.R., J.J. Nugent, and J.K. Meisel, 2003).

The establishment of invasive species and noxious weeds which will compete with native vegetation recovery is likely. During field assessment inventories, the vegetation specialist recorded sightings of diffuse knapweed (*Centaurea diffusa*), Russian thistle (*Salsola kali*), and kochia (*Bassia scoparia*). Additional diffuse knapweed, kochia, Russian thistle, as well as bull thistle (*Cirsium vulgare*), rush skeletonweed (*Chondrilla juncea*), and puncturevine (*Tribulus terrestris*) infestations are also located around the fire area. These noxious weeds spread vigorously, and are a threat to the burned area. Each of these species is currently located along existing road systems and/or in areas near the fire. Most of the knapweed species were setting seed at the time of the fire; while some seed was likely lost in the fire, seeds were observed blowing through the

fire area. It is imperative to treat known populations prior to seed-set in order to reduce the expansion potentials of these populations into the fire area. Immediate treatment of these populations is recommended.

Additionally, the fire area is considered a disturbed site, and is at risk of invasion from non-native species. Upon the discovery of new noxious weed populations, accurate population information should be collected through the use of Global Positioning Systems (GPS) to determine infestation size, original source and potential control methods. Control efforts will be implemented in accordance with the Invasive species management plan guidelines and protocols.

The U.S. Fish and Wildlife Service will utilize an Integrated Pest Management (IPM) approach to treat targeted invasive plant species on the Hanford Reach National Monument. Manual, mechanical, biological, cultural (e.g., prescribed fire, competitive plantings), and chemical treatment methods will be utilized to achieve prioritized weed control objectives. Invasive species managers will draw upon the full range of appropriate control technologies to develop integrated treatment plans for target species at selected priority sites. Treatment methodologies will be based upon the best information available from weed management literature and professional experience, tailored to the characteristics of the particular species and site.

2. Revegetation

Concern has been expressed concerning the loss of vegetation cover on the sandy soils of the 243 fire area along Highway 24 and Road L SW. Natural re-vegetation of the sand dunes will be slow and will take many years to stabilize these areas. Stabilization and re-vegetation of those areas as needed to protect public safety along the road way. Revegetation should be conducted in order to protect soils in the area, and reduce ecological change due to further erosion and degradation. Wind erosion is highly likely in this area. Additionally, because the site is at risk from non-native species and noxious weeds, re-vegetation must be completed to protect the plant community and ecology of the site. As stated above, it is unlikely that the fire area will recover without some intervention and active restoration effort.

IV. RECOMMENDATIONS

A. Fire Suppression Rehabilitation:

Suppression account -Dozer/Disc line Rehabilitation- Reseed all disturbed areas resulting from suppression actions with native seed species to protect the ecological integrity of the area. Seeding will be postponed until fall of 2008 or until such time as adequate moisture provides a firm seedbed for stabilization actions.

B. Burned Area Rehabilitation: (specification related)

The following recommendations are offered to assist in the timely recovery of the 243 Fire:

-1 Non-Native Invasive Species Control- Integrated Pest Management- Identify and treat non-native invasive species within the 243 fire area, and control infestations in areas adjacent to the 243 Fire area utilizing integrated pest management techniques.

#-2 Ecological Stabilization- Native Grass Seeding- Apply native seed mix in burned area to stabilize ecological integrity of native shrub steppe community, prevent invasion by noxious weeds and non-native species, stabilize soils and reduce erosion that threatens public safety and site degradation.

-4 Ecological Stabilization - Native shrub planting - Collect native seed, grow out in nursery setting, and plant seedlings within the 243 fire area to re-establish shrub species within fire area.

C. Rehabilitation (non-specification related treatments)

- Submit long-term rehabilitation plan as required to stabilize soils, control non-native invasive species and protect ecological integrity of the site.

D. Management Recommendations (non-specification related)

- Coordinate emergency stabilization needs with the Department of Energy to ensure public safety is protected along State Highway 24.
- Re-establish boundary fences and Refuge closure signs along irrigation rights-of-way to protect stabilization treatments and reduce trespass potentials.
- Increase law enforcement patrols through the fire area until vegetation is re-established

VI. References:

- Easterly, R. and D. Salstrom. 2004. Current vegetation map of Saddle Mountain, Wahluke and Ringold Units, Hanford Reach National Monument. SEE botanical consulting, Report to the U.S. Fish and Wildlife Service.
- Evans, J. R., J.J. Nugent, and J. K. Meisel. 2003. Invasive Plant Species Inventory and Management Plan for the Hanford Reach National Monument. Report to U.S. Fish and Wildlife Service, The Nature Conservancy of Washington, Seattle, Washington.
- The Nature Conservancy of Washington. 1999. Biodiversity Inventory and Analysis of the Hanford Site. Final Report. 1994-1999.
- The Nature Conservancy of Washington. 1995. Annual Report. Biodiversity Inventory and Analysis of the Hanford Site.

Washington State Department of Natural Resources, 2000. Field Guide to Washington's Rare Plants.

Fire Effects Information System (FEIS)- National Interagency Fire Center Web Site

Proclamation 7319 of June 9, 2000. Establishment of the Hanford Reach National Monument.

National Wildlife Refuge System Improvement Act of 1997.

USFWS. Fire Management Handbook. Emergency Fire Rehabilitation Standards.

Joel G. Peterson. 1995. Ecological Implications of Sagebrush Manipulation.

C.A. Brandt et al. 1999. Plant Reestablishment After Soil Disturbance: Effects on Soil, Treatment, and Time.

Steven O. Link et al. 1990. Response of a Shrub-Steppe Ecosystem to Fire: Soil Water and Vegetational Change.

Heidi L. Newsome, Wildlife Biologist and Kevin Goldie, Wildlife Biologist - Hanford Reach National Monument 509-371-1801

BURNED AREA REHABILITATION PLAN

243 Fire

THREATENED AND ENDANGERED PLANT RESOURCES ASSESSMENT

I. OBJECTIVES

- Identify and locate threatened and endangered plant species impacted by fire and/or suppression actions.

II. ISSUES

- Determine impacts of fire to three state listed threatened, endangered and sensitive plant species and/or habitat.

III. OBSERVATIONS

Emergency consultation was held with the U.S. Fish and Wildlife Service (USFWS) on August 4, 2008 for threatened and endangered (T&E) species known to occur within the 243 Fire area in Grant, County, Washington. A current USFWS species list for the county and GIS data layers for the Monument were consulted. No federally listed plant species were identified. However, two state listed rare plant species were identified within the fire perimeter, *Camissonia pygmaea* (dwarf evening primrose) and *Oenothera caespitosa* Nutt. ssp. *caespitosa* (caespitose evening-primrose), both considered state sensitive species.

Washington State listed species known to occur within the fire area will be discussed within this assessment due to management guidelines and policies administered by the USFWS for the impacted lands. All planning documents covering the Monument focus on the preservation and protection of the shrub-steppe as a primary management goal. Current management direction provides for the protection, monitoring and recovery of federally listed and state listed threatened, endangered, and sensitive species. T&E plants will be discussed separately in order to better document current information regarding habitat and fire effects to each species.

B. Reconnaissance Methodology and Results

On August 4, 2008 emergency consultation was initiated with the USFWS to verify documented T&E species (flora and fauna) within the fire area. A current species list was obtained for Grant County, Washington. Vegetation layers within the Monument GIS system were reviewed and no locations of the federally listed plants were discovered. Two state listed plants were identified within the fire perimeter.

Camissonia pygmaea (dwarf evening primrose), plant

SS

Oenothera caespitosa Nutt. ssp. *caespitosa* (caespitose evening-primrose) SS

The following listed species were identified as occurring, or having habitat within, Grant County. However, through post fire reconnaissance and consultation with local experts, it was determined that these species were **NOT** affected by the fire because they have no habitat within or adjacent to the fire area, and/or inventories prior to the fire determined absence, or the fire is outside of the species range.

Spiranthes diluvialis (Ute ladies'-tresses), plant T/SE

Artemisia campestris sp. *borealis* var. *wormskioldii*
(Northern wormwood), plant C/SE

Cryptantha leucophaea (Gray cryptantha), plant FSC/SS

Lomatium tuberosum (Hoover's desert-parsley), plant FSC/SS

Oxytropis campestris var. *wanapum* (Wanapum crazyweed), plant FSC/SE

Erigeron basalticus (Basalt daisy), plant FSC/ST

KEY TO LISTING STATUS:

E	FEDERAL ENDANGERED
T	FEDERAL THREATENED
C	FEDERAL CANDIDATE
FSC	FEDERAL SPECIES OF CONCERN
SC	STATE CANDIDATE
SE	STATE ENDANGERED
ST	STATE THREATENED
SS	STATE SENSITIVE
SM	STATE MONITOR
TI	TRIBAL IMPORTANCE

A review was also conducted using the Fire Effects Information System (FEIS) at the National Interagency Fire Center to determine known effects on these species. A review of the FEIS system was conducted on August 4, 2008 and showed that no current information is recorded within this data base pertaining to known fire effects. To date, no known comprehensive studies have been conducted to document fire effects on the currently listed T&E species within these shrub-steppe plant communities.

Outlined below is a brief synopsis of the associated habitat(s) for the listed species and potential fire impacts to each:

Dwarf evening primrose (*Camissonia pygmaea*):

Habitat: Camissonia is a perennial forb that favors dry, open habitats, occurring on stony soils, basalt blocks, cobbles with silt, sand and caliche fragments. The surrounding plant community is bitterbrush/Sandberg's bluegrass.

Findings: This species is known to occur in the fire area on south-facing slopes. During the 243 incident, fire intensity was high. Monitoring of post-fire populations will be needed in order to determine any detrimental impacts to the species.

Caespitose evening-primrose (*Oenothera caespitosa* Nutt. ssp. *caespitosa*)

Habitat: The subspecies occurs as scattered individuals or colonies in open sites on talus or other rocky slopes as well as along the flat river terrace of the Columbia River. It occurs within general areas that are dominated by *Artemisia tridentata* or *Artemisia rigida*. *Chrysothamnus nauseosus*, *Eriogonum douglasii* and *E. niveum* are common shrubs in the vicinity. There are fewer than 10 known occurrences in Washington.

Findings: This species is known to occur in the fire area. During the 243 incident, fire intensity was high. Monitoring of post-fire populations will be needed in order to determine any detrimental impacts to this species.

III. Indirect Effects

Indirect effects are those that may occur or are anticipated to occur which may be beneficial or detrimental to the species. As discussed above, monitoring of T&E species will be required in order to better quantify the effects of the Weather Station Fire on each species and its related habitat.

Indirect detrimental effects to these species could result from competition from invasive plant species, potential loss of soil productivity due to wind erosion, loss of seed viability when exposed to the elements. In areas with soil movement due to wind erosion seeds may be buried too deep, or roots may become exposed.

However, it is important to note that beneficial effects may assist some species in their recovery or provide opportunities for species enrichment. In those areas where fire intensity was low and the fire burned in a mosaic fashion, some benefits to T&E species may be derived. These benefits may result from: the release of nutrients back into the soil profile; a reduction in competition for soil nutrients, sun, and soil moisture from other perennial species for the first 1-2 years during the recovery period; and the re-establishment of plants from roots and soil seedbanks.

Close monitoring of the known sites of T&E species with careful documentation of effects will be important to gain a better understanding of the fire effects to these species within the affected plant associations. Monitoring work is also needed to comply with FWS and Monument mandates for the protection and prevention of unacceptable degradation of T&E species. Information collected should be added into the existing FEIS system to ensure that fire effects data is available in the future for these species.

IV. RECOMMENDATIONS

A. Emergency Stabilization (specification related)-None

B. Rehabilitation :

1. Reseed with native vegetation to prevent spread of native plants and encourage recovery of habitat.
2. Monitor post-fire response of rare plant populations.

V. LITERATURE REVIEWED:

July 7, 2005. USFWS T&E Species List for Grant County, Washington State.

USDI-DOI. *Effects of Fire on Threatened and Endangered Plants: An Annotated Bibliography*.

The Nature Conservancy of Washington. 1999. Final Report. 1994-1999. *Biodiversity Inventory and Analysis of the Hanford Site*.

Proclamation 7319 of June 9, 2000. *Establishment of the Hanford Reach National Monument*.

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Fire Effects Information System, FEIS, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis> [2005, July 12].

Sackschewsky, M. R. and J. L. Downs. 2001. Vascular Plants of the Hanford Site. Report PNNL-13688. Pacific Northwest National Lab, Richland, Washington, 99352.

Heidi L. Newsome, Wildlife Biologist, USFWS (509) 546-8300

BURNED AREA EMERGENCY REHABILITATION PLAN

243 Fire

OPERATIONS ASSESSMENT

III. I. OBJECTIVES

- Identify, inventory, and map fire suppression impacts on jurisdictions affected by the fire.
- Specify rehabilitation measures to mitigate fire suppression impacts.
- Coordinate with local agencies so that specification recommendations are consistent with agency objectives.
- Protect natural and cultural resource values during rehabilitation efforts.

II. ISSUES

- Potential impacts to critical natural and cultural resources from suppression actions.
- Extensive soil disturbance on highly erodible soils from fire suppression activities.
- Damage to fences within fire perimeter associated with fire suppression actions.

III. OBSERVATIONS

A. Background

Please refer to fire history summary.

B. Reconnaissance Methodology and Results

On July 21, 2008 HRNM staff began evaluating resource impacts caused by the suppression effort on lands and physical improvements with the 243 fire area. Team members did reconnaissance from the office and obtained information from suppression forces. Information was also gathered from interviews with Division Supervisors, and from engine crews assigned to the fire.

C. Findings

The 243 fire burned 1386.6 acres on the Hanford Reach National Monument. Approximately 3.0 miles of diskline was created to stop the fire.

Rehabilitation of suppression line is necessary to protect habitats from noxious weed infestation, ORV intrusion on the landscape and to minimize fragmentation of ecological areas. Monitoring of suppression lines is necessary to determine the need for future noxious weed mitigation needs. Disklines within the burned area on lands managed by FWS will be treated according to methods described in the Hanford Site Biological Resource Management Plan (HSBRMP, 1996).

There are three types of suppression impacts to be considered:

- Diskline built on FWS which require restoration and revegetation. This will require adequate soil moisture to establish a firm seedbed prior to reseeding actions.
- Repair of the boundary fence and interior fence on the HRNM.
- Access roads to the fire area that were used for suppression actions are now impassible due to the amount of loose powdery soils resulting from the destruction of soil structure in the upper horizons. These roads will be rehabilitated as weather permits (accumulation of adequate moisture).

IV. RECOMMENDATIONS

A. Fire Suppression- (non-specification related-charged to suppression account)

- **Diskline and Road Rehabilitation.** Rehabilitate disklines and other sites directly or indirectly impacted by fire suppression activities. Diskline rehab should be done at a later date due to the degraded soil conditions at this time. This activity should take place in the late fall or early winter when soil moisture content is higher.
- **Fence Repair-** Repair suppression damaged fence around perimeter of the fire between HRNM boundary and other private lands.

B. Management (non-specification related)

- Continue to review rehabilitation specifications with operators and other personnel associated with implementation of the BAER Plan to insure suppression rehabilitation specifications are clearly understood for protection of sensitive resources and land productivity. Ensure proper accounting procedures are followed in the repair of suppression related impacts through suppression accounts.
- Guarantee safety of personnel assigned to rehab operational assignments in the fire area.
- Monitor suppression related damage on dirt roads following fall and winter moisture events to see if additional rehab measures are necessary.

IV.

V. CONSULTATIONS

Greg Hughes, Project Leader FWS
Heidi Newsome, Wildlife Biologist, FWS

VI. REFERENCES

USDI, 1995. BAER Field Team Leader Reference Book
DOE, 1996. Hanford Site Biological Resource Management Plan

BURNED AREA EMERGENCY REHABILITATION PLAN

243 FIRE-HANFORD REACH NATIONAL MONUMENT

APPENDIX II - ENVIRONMENTAL COMPLIANCE

ENVIRONMENTAL COMPLIANCE CONSIDERATIONS, DOCUMENTATION, AND CONSULTATIONS

243 Fire Burned Area Emergency Stabilization Plan

FEDERAL, STATE, AND PRIVATE LANDS ENVIRONMENTAL COMPLIANCE RESPONSIBILITIES

All projects proposed in the 243 Fire Burned Area Emergency Rehabilitation (R) Plan that are prescribed, funded, or implemented by Federal agencies on Federal, State, or private lands are subject to compliance with the National Environmental Policy Act (NEPA) in accordance with the guidelines provided by the Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508); Department of the Interior Manual, Part 516, U.S. Fish and Wildlife Service, NEPA Guidelines, Part 516 DM 6, Appendix 1; and DOE, NEPA Regulations (10 CFR Part 1021). This Appendix documents the BAER Team considerations of NEPA compliance requirements for prescribed rehabilitation and monitoring actions described in this plan for all jurisdictions affected by the 243 Fire burned area emergency stabilization.

B. RELATED PLANS AND CUMULATIVE IMPACTS ANALYSIS

Draft Hanford Biological Resources Management Plan and Final Hanford Comprehensive Land-Use Plan Environmental Impact Statement: The BAER Team Environmental Protection Specialist reviewed the Draft Hanford Biological Resources Management Plan (1996) and Final Hanford Comprehensive Land-Use Plan Environmental Impact Statement (September 1999) and determined that actions proposed in the 243 Fire BAER Plan within the boundary of the Hanford Reach National Monument are consistent with the management objectives established in the Land-Use Plan. The EIS incorporates the management plan by reference. The EIS/management plan specifically addresses bulldozer lines and provides NEPA compliance for bulldozer line rehabilitation under NEPA.

Cumulative Impact Analysis: Cumulative effects are the environmental impacts resulting from the incremental impacts of a proposed action when added to other past, present, and reasonably foreseeable future actions, both Federal and non-

Federal. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time. The emergency protection and stabilization treatments for areas affected by the 243 Fire, as proposed in the 243 Fire ES Plan, do not result in an intensity of impact (i.e. major ground disturbance, etc.) that would cumulatively constitute a significant impact on the quality of the environment. The treatments are consistent with the above jurisdictional management plans and associated environmental compliance documents and categorical exclusions listed below.

C. APPLICABLE AND RELEVANT CATEGORICAL EXCLUSIONS

U.S. Fish and Wildlife Service: The individual actions proposed in this plan for Hanford Reach National Monument are Categorically Excluded from further environmental analysis as provided for in the Department of the Interior Manual Part 516 and U.S. Fish and Wildlife Service, NEPA Guidelines, Part 516 DM 6, Appendix 1. All applicable and relevant Department and Agency Categorical Exclusions are listed below. Department exceptions (516) DM 2.3 do not apply to any of the individual actions proposed. Categorical Exclusion decisions were made with consideration given to the results of required emergency consultations completed by the BAER Team and documented in Section E below.

Applicable Departmental Categorical Exclusions

- | | |
|-------------------------|---|
| 516 DM2 App. 2, 1.6 | Non-destructive data collection, inventory (including field, aerial, and satellite surveying and mapping), study, research and monitoring activities. |
| 516 DM 6 App. 4.4 A | Operations, maintenance, and replacement of existing facilities (includes road maintenance). |
| 516 DM 6 App. 4.4 L(5) | Emergency road repairs under 23 U.S.C. 125. |
| 516 DM 6 App. 7.4 C(3) | Routine maintenance and repairs to non-historic structures, facilities, utilities, grounds and trails. |
| 516 DM 6 App. 7.4 C(19) | Landscaping and landscape maintenance in previously disturbed or developed areas. |

Applicable U.S. Fish and Wildlife Service Categorical Exclusions

- | | |
|------------------------|---|
| 516 DM 6 App. 1.4B (1) | Research, inventory, and information collection activities directly related to the conservation of fish and wildlife resources which involve negligible animal mortality of habitat destruction, no introduction of contaminants, or no introduction of organisms not indigenous to the affected ecosystem. |
|------------------------|---|

- 516 DM 6 App. 1.4B (3) i The installation of fences.
- 516 DM 6 App. 1.4B (3)iii The planting of seeds or seedlings and other minor revegetation actions.
- 516 DM 6 App. 1.4B (3)v The development of limited access for routine maintenance and management purposes.
- 516 DM 6 App. 1.4B (5) Fire management activities, including prevention and restoration measures, when conducted in accordance with Departmental and Service procedures.516 DM 6 App. 1.4B (6). The reintroduction or supplementation (e.g. stocking) of native, formerly native, or established species into suitable habitat within their historic or established range, where no or negligible environmental disturbances are anticipated.

D. STATEMENT OF COMPLIANCE FOR THE 243 FIRE BURNED AREA EMERGENCY STABILIZATION PLAN

This section documents consideration given to the requirements of specific environmental laws in the development of the 243 Fire BAER Plan. Specific consultations initiated or completed during development and implementation of this plan are also documented. The following executive orders and legislative acts have been reviewed as they apply to the 243 Fire BAER Plan:

1. National Historic Preservation Act (NHPA). The BAER Team archeologists have initiated necessary consultation with the Washington State Historic Preservation Office (SHPO) and the Yakama, Umatilla, Nez Perce, and Wanapum Tribes regarding treatments proposed in the 243 Fire BAER Plan.

Executive Order 11988. Floodplain Management. No treatments are proposed within the 100-year floodplain.

Executive Order 11990. Protection of Wetlands. No treatments are proposed within jurisdictional wetlands.

Executive Order 12372. Intergovernmental Review. Coordination and consultation is ongoing with affected Tribes, Federal, State, and local agencies. A copy of the BAER Plan will be disseminated to all affected agencies.

Executive Order 12892. Federal Actions to Address Environmental Justice in Minority and Low-Income Populations. All Federal actions must address and identify, as appropriate, disproportionately high and adverse human health or low-income populations, and Indian Tribes in the United States. The BAER Team Environmental Protection Specialist has determined that the actions proposed in this plan will result in no adverse human health or environmental effects for minority or low-income populations and Indian Tribes.

Endangered Species Act. The BAER Team wildlife biologist and vegetation specialists have consulted with the Service and Washington Department of Fish and Wildlife regarding actions proposed in this plan and potential affects on Federally and State listed species. Individual agencies are responsible for continued consultations during plan implementation.

7. Secretarial Order 3127. Although contaminated sites are known to occur on properties owned by the Hanford National Laboratory, no treatments are proposed that would affect contaminated sites. There are no known contaminated sites on other jurisdictions affected by the 243 Fire.

Clean Water Act. No treatments are proposed within jurisdictional wetlands.

Clean Air Act. Federal Ambient Air Quality Primary and Secondary Standards are provided by the National Ambient Air Quality Standards, as established by the U.S. Environmental Protection Agency (EPA) (Clean Air Act, 42 U.S.C. 7470, et seq., as amended). The BAER Team Environmental Protection Specialist has determined that treatments prescribed in the 243 burned area will have short-term minor impacts to air quality that would not differ significantly from routine land use practices for the area. Long-term, treatments proposed in this plan would be expected to have a beneficial impact to air quality through stabilization of ash and soils within the 243 Fire burned area.

E. CONSULTATIONS

Department of Energy, Hanford National Laboratory

Tom Ferns, Program Manager, Richland Operations Office

NEPA Checklist: If any of the following exception applies, the ESR Plan cannot be Categorically Excluded and an Environmental Assessment (EA) is required.

(Yes) (No)

- ☐ (X) Adversely affect Public Health and Safety
- ☐ (X) Adversely affect historic or cultural resources, wilderness, wild and scenic rivers aquifers, prime farmlands, wetlands, floodplains, ecologically critical areas, or Natural Landmarks.
- ☐ (X) Have highly controversial environmental effects.
- ☐ (X) Have highly uncertain environmental effects or involve unique or unknown environmental risks.
- ☐ (X) Establish a precedent resulting in significant environmental effects.
- ☐ (X) Relates to other actions with individually insignificant but cumulatively significant environmental effects.
- ☐ (X) Adversely effects properties listed or eligible for listing in the National Register of Historic Places
- ☐ (X) Adversely affect a species listed or proposed to be listed as Threatened or Endangered.
- ☐ (X) Threaten to violate any laws or requirements imposed for the "protection of the environment" such as Executive Order 11988 (Floodplain Management) or Executive Order 11990 (Protection of Wetlands).

National Historic Preservation Act

Ground Disturbance:

- ☐ None
- ☒ Ground disturbance did occur and an archeologist survey, required under section 110 of the NHPA has been prepared. Findings have been documented in Appendix I- Cultural Resources Assessment.

A NHPA Clearance Form:

- ☐ Is required because the project may have affected a site that is eligible or on the national register. The clearance form is attached. SHPO has been consulted under Section 106 (see Cultural Resource Assessment, Appendix I).
- ☒ Is not required because the ESR Plan has no potential to affect cultural resources (initial of cultural resource specialist).

Other Requirements

(Yes) (No)

- ☒ () Does the ESR Plan have potential to affect any Native American uses? If so, consultation with affiliated tribes is needed.
- ☒ () Are any toxic chemicals, including pesticides or treated wood, proposed for use? If so, local agency integrated pest management specialists must be consulted.

I have reviewed the proposals in the 243 Fire Burned Area Emergency Stabilization Plan in accordance with the criteria above and have determined that the proposed actions would not involve any significant environmental effect. Therefore it is categorically excluded from further environmental (NEPA) review and documentation. ESR Team technical specialists have completed necessary coordination and consultation to insure compliance with the National Historic Preservation Act, Endangered Species Act, Clean Water Act and other Federal, State and local environment review requirements.

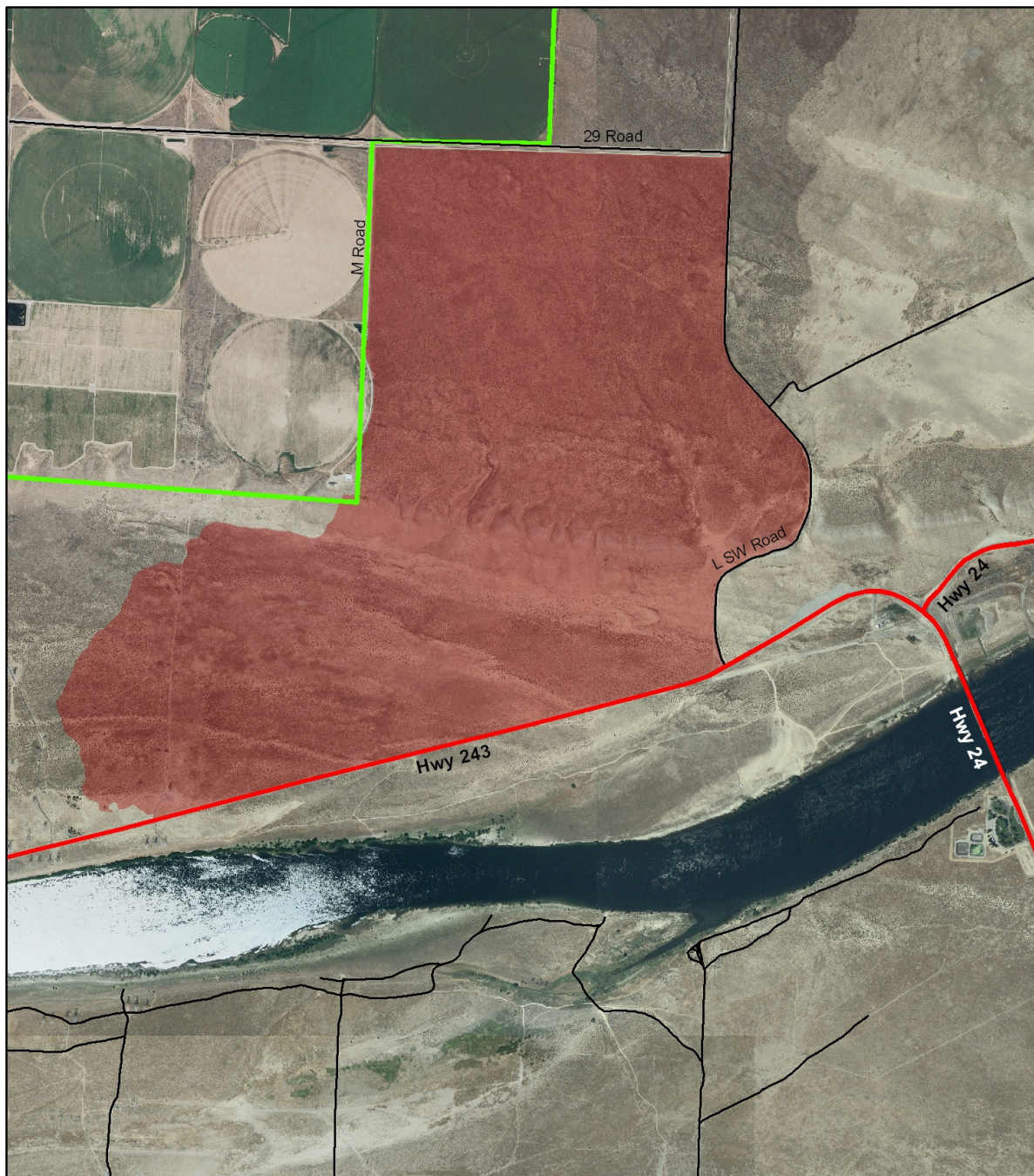
ESR Team Environmental Protection Specialist Date

Project Leader, Hanford Reach National Monument Date

BURNED AREA EMERGENCY REHABILITATION PLAN
243 FIRE-HANFORD REACH NATIONAL MONUMENT

APPENDIX III - MAPS

- Burned Area
- Soils
- Pre-fire Vegetation
- Wildlife Sightings



243 Fire Burned Area

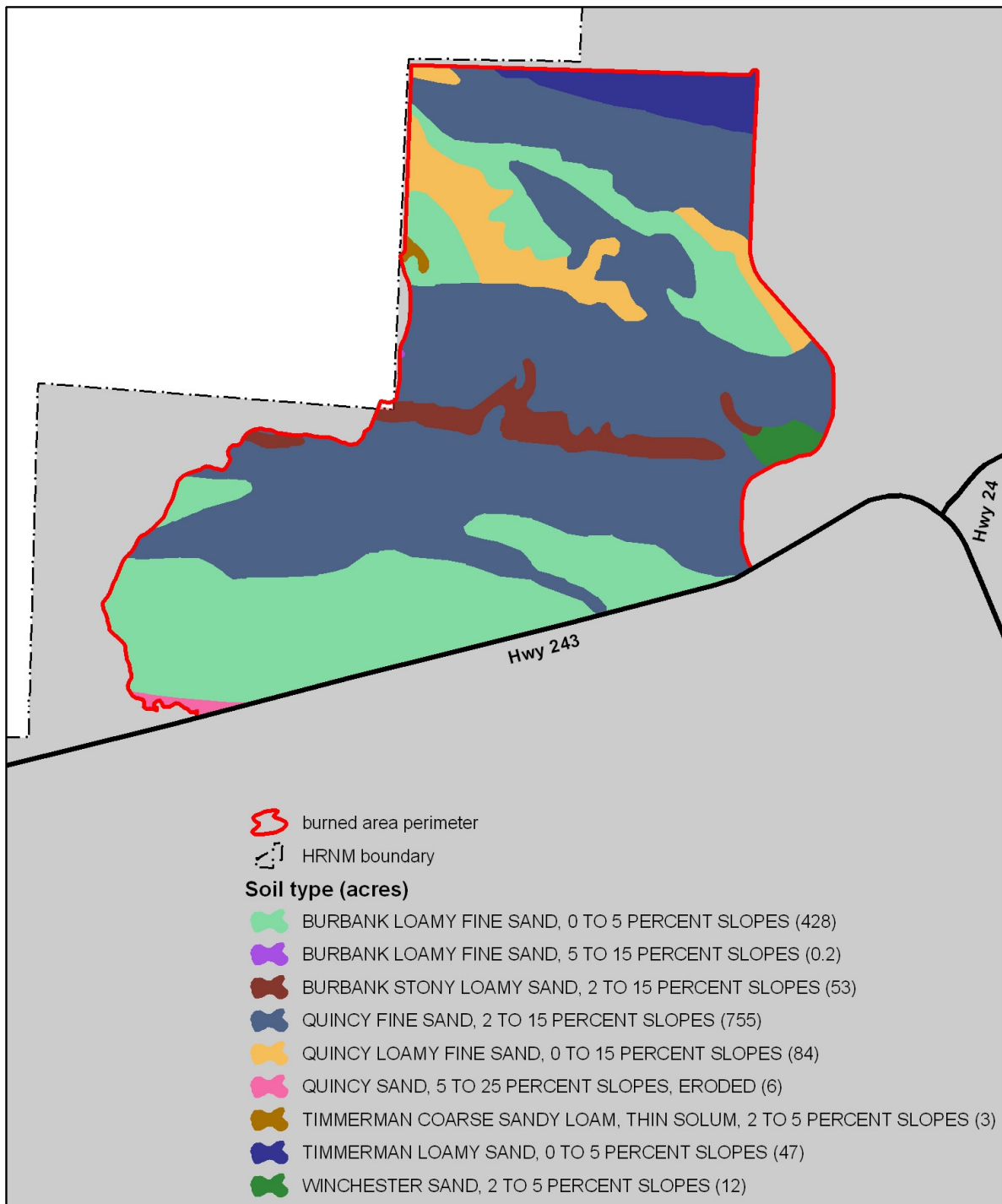
- started 14 July 2008
- burned 1387 acres

Map date: 21 August 2008
File name: 243Fire_perimeter.pdf

- burned area
- HRNM boundary
- major road
- other road

0 0.5 Mile

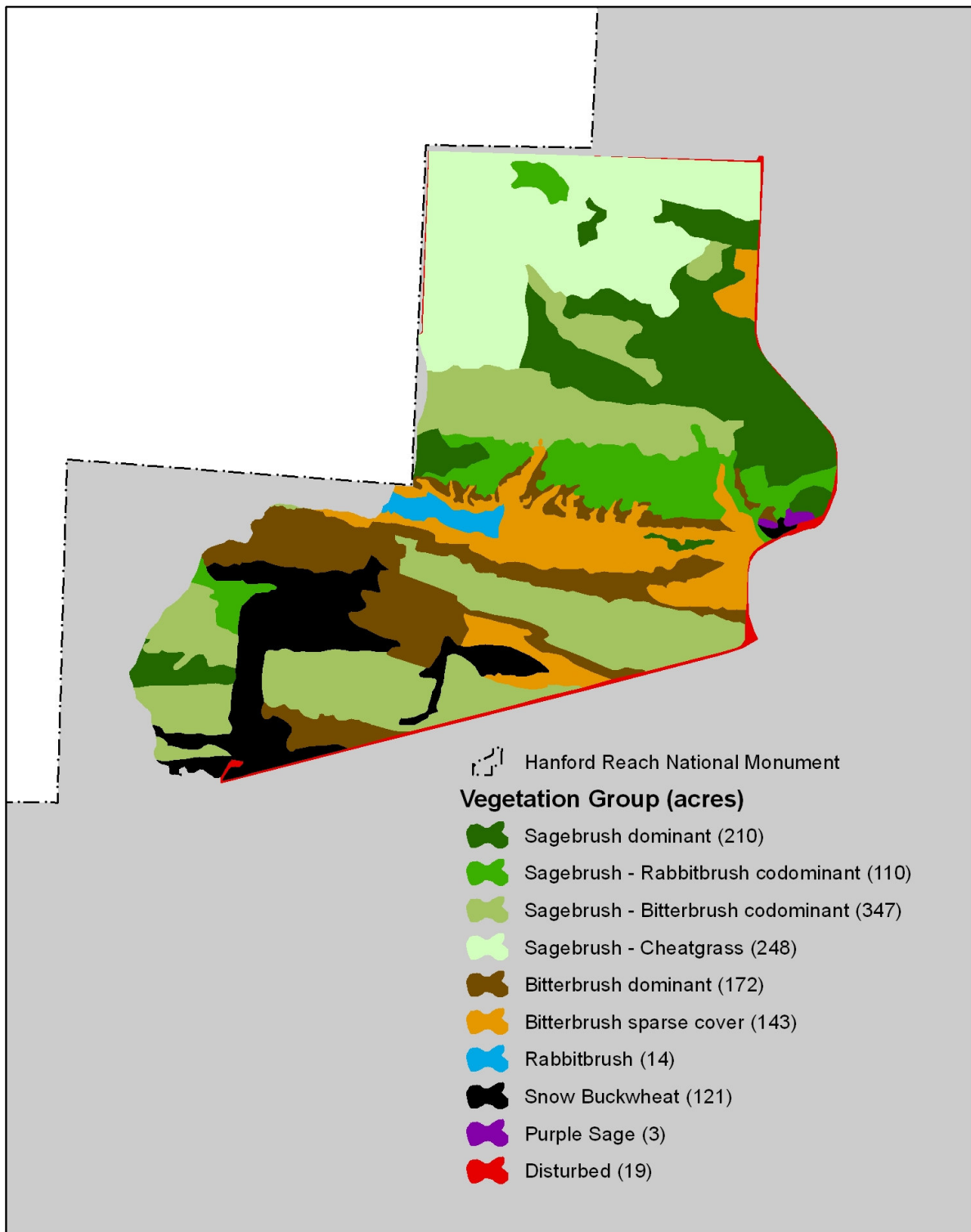




Soil types on Hanford Reach NM within the 243 Fire Burned Area

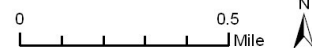
Map date: 25 August 2008
File name: 243Fire_soils.pdf

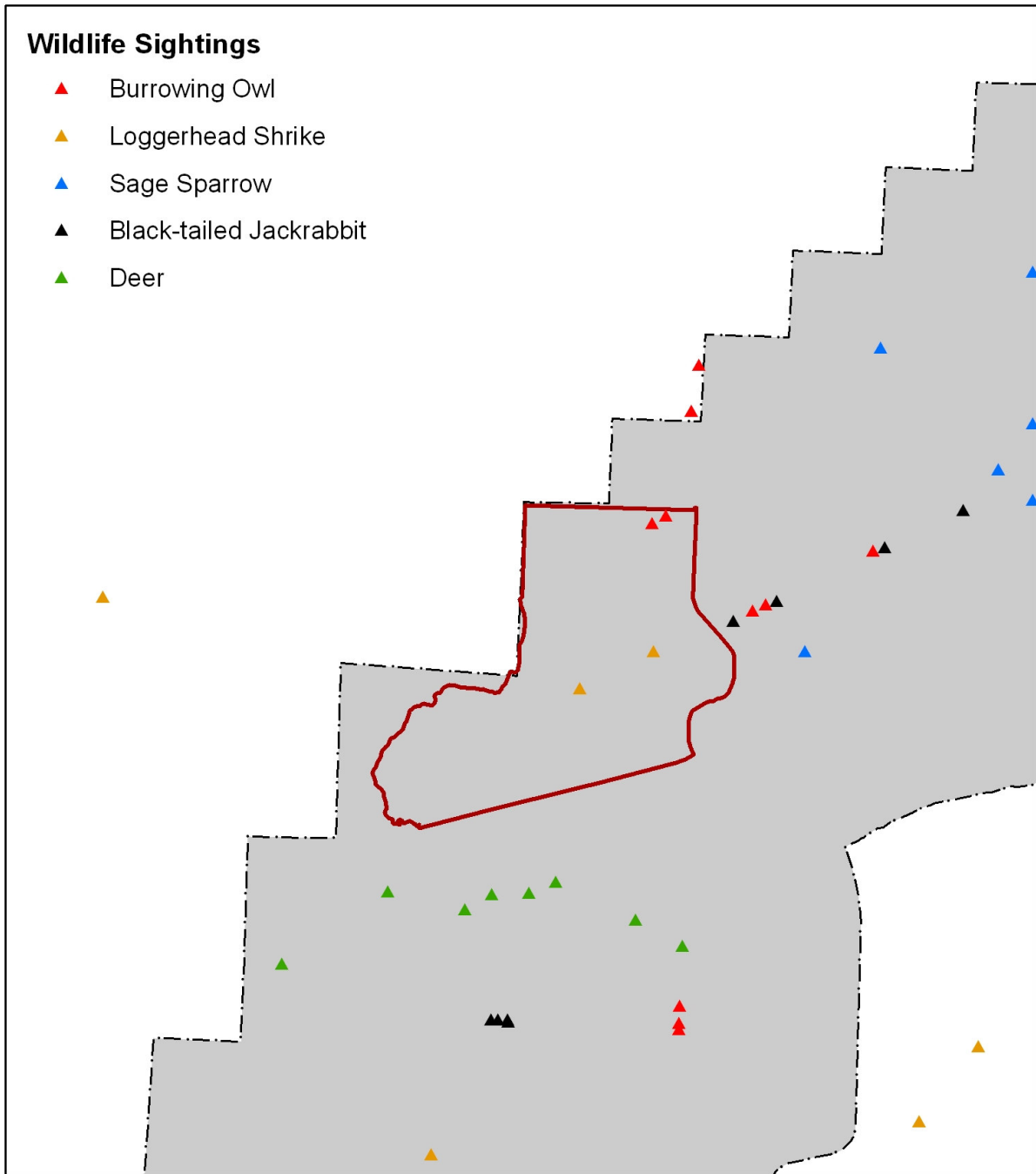






Pre-fire Vegetation on Hanford Reach National Monument within the 243 Fire Burned Area

Map date: 21 August 2008
File name: Pre-243Fire_vegetation.pdf

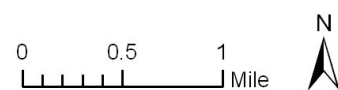




Wildlife Sightings in the Vicinity of 243 Fire

 burned area perimeter
 Hanford Reach NM

Map date: 21 August 2008
 File name: 243Fire_wildlife.pdf



BURNED AREA EMERGENCY REHABILITATION PLAN

243 FIRE-HANFORD REACH NATIONAL MONUMENT

APPENDIX IV – PHOTO DOCUMENTATION

- Soil Erosion Issues and Public Safety
- Weed and Vegetation Resource Issues
- Suppression Impacts





Photo 1: Sand and dust filling the road side ditches and duning across Road L SW.



Photo 2: Dust and sand drifted onto roadways is stirred up by vehicle travel, causing visibility issues.



Photo 3: The frequent winds in the fire zone blow dust, sand, and ash across the roadways, also causing severe visibility issues.



Photo 4: Loss of vegetative cover and damage to the biological crust has destabilized the fine soils of the fire area, making them prone to mobilization and the habitat vulnerable to Aeolian processes.



Photo 5: In the mosaic burn area, most of the sagebrush has likely been killed but the biological crusts and understory vegetations are relatively intact. However, they are surrounded by heavily burned areas and mobilized soils, which will cause further damage to the mosaic burn areas and contribute to even greater mobilized dust and sand.



Photo 6: A close up within the transition area between the mosaic burn area and the heavily burned area, this photo shows the processes of Aeolian erosion and deposition that are causing further damage to the biological crusts and vegetative resources. Note the scouring around the moss clumps and bunchgrass crowns and the duning behind the burned rabbitbrush.

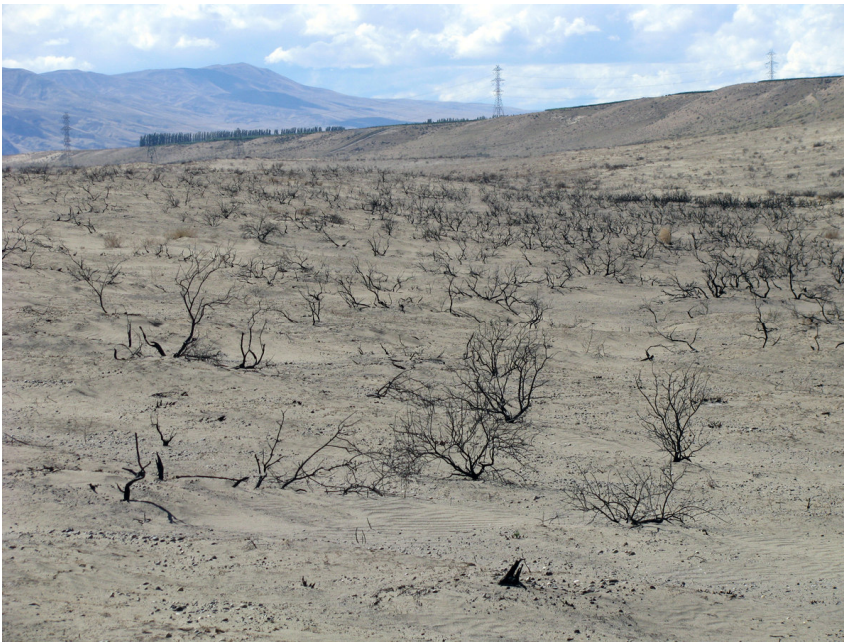


Photo 7: A destroyed bitterbrush stand (the last contiguous stand of dominant bitterbrush that was left on the Hanford Reach National Monument), duning soils, and fire-damaged biological crust. Note the lack of ash on the soil, indicating a high degree of soil movement.



Photo 8: Senesced diffuse knapweed with intact seed heads located within the 243 Fire burned area.



Photo 9: Unburned Russian thistle, kochia, and tumble mustard on the northern boundary of the 243 Fire burned area. Puncturevine is also present along the roadways and canals around the fire area. Also note the blowing dust and sand from the burned area causing reduced visibility issues on the roadway (29 Road).



Photo 10: Puncturevine and Russian thistle at one of the fire area access points (power line maintenance road) used during by fire response personnel. Puncturevine was seeding at the time of the fire and was likely transported into the fire interior by responder vehicles.



Photo 11: Part of the disk line installed during fire response cut through healthy biological crusts and native habitats. This will act as a corridor for invasive weeds into the fire area without rehabilitation.